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EDUCATIONAL REVIEW

JUNE, 1906

I

THE CHANGING CONCEPTION OF "THE FACULTY" IN AMERICAN UNIVERSITIES[1]

I

The original faculty, and still the necessarily central faculty of Arts and Sciences,—the old "college faculty" with all that growth outward and upward has added—is as much as this short paper can sketch, even in bare outline. Within our generation it has greatly changed. It is our purpose to show not so much the history of that change as the present situation and some of its implications.

The living root of the old faculty, as of every other part of the college, was a distinctively Christian impulse. It was the belief that in serving the cause of knowledge and truth by promoting liberal education men were serving the cause of Christ. Presidents, trustees, and professors were alike to give themselves in self-denial to their several tasks, mindful that this holy ideal was to guide and ennoble their every effort. And the old root flowered many a time in lives of strength and loveliness that remain as the fairest memories of the older period. Yet perhaps the ideal was too high ever to be realized generally by men as men were and still are. Certainly it is an infinite pity that a narrow particularism, an insistence on the local and clannish, and a consequent sectarian warfare, somewhat mitigated by common sense and kindliness, so often dis-

[1] A paper read before the Association of American Universities at the Annual meeting in San Francisco, March 17, 1906.

figured the old college that its power for good was lessened. Let us make these abatements freely, and yet gratefully remember that the old college faculty at least professed and tried to show that God is the end of all our knowing and that Christ is the Master of the Schools.

With this ideal, then as now, the fiercely practical side of our American temper was found to be at variance. The sense of achievement in visible things fought against faith in the invisible. A nation had been made and kept together. Society had been "installed over a vast continent." We were free, as few peoples were, from such fearful dangers as poverty, famine, and invasion. Men could live free from fear. Careers were here for all who could make them. The elements of material good fortune were becoming ours beyond any measure known in history. And so the rival ideal of success, first in the outward and then in the sordid way, has been growing with our growth, feeding itself all the while on the old eternal human selfishness. It has, of course, been true at all times, and notably so in times of trial like the Revolution and Civil War, that the nobler side has asserted itself and that men in their thinking and doing "endured as seeing Him who is invisible." But the times of ease, plenty, and self-indulgence have not been friendly to the old college ideal, any more than they are friendly to the homely virtues of simplicity, clear sincerity, scrupulous respect for the rights of others, and modest independence.

Moreover, as is almost too obvious to need mention, and yet so clamorously important as to need sure remembrance, our whole life, including its educational preparation, has been getting more and more complex and tense. The individual counts for less and less. The aggregate, whether organized in corporate form or disorganized in wild, mob-like drifts of opinion and action, counts for more. To keep pace with our progress, to master the material of our lives so that the individual shall not be overwhelmed and crushed, some sort of organization becomes more and more imperative, if only that each man may have a fair chance to get his own good by coöperating and sharing in the common good. And out of this state of things has come an impatient message to our larger

universities first, and then to the lesser ones. It is that efficiency must be our watchword (and catchword), that education is a business, and that universities are corporations like banks, railroads, factories, department stores, and insurance companies. Notice is being served that if our university faculties do not conform to this notion, they must give way to faculties that will. This is the message. What have we to say about it?

II

Let us make some admissions. First of all, there has been a great deal of folly talked about the freedom of faculties and of individual professors. Would that the fact a man is a professor were sufficient proof that he is also a man of sense! Sometimes it is not even proof that he is a scholar. Before we talk of larger freedom, we must be sure in a given case that the individual professor, and in each faculty at least the strong majority, is fit to be free—that is, sure to serve well the one supreme end for which professors and faculties legitimately exist. That end is intellectual and moral freedom, not for the professors alone, but for all others with whom they come in contact. It is a case where reciprocity is the only protection.

And so the actual assumption of responsibility for using this freedom well must come in to prove a man fit to be free—to temper the judgment, to make us wise in counsel, considerate in action, tactful in winning men, swift to help and slow to harm the university we represent. If no professor proposed a resolution in faculty, I will not say unless it were sensible, but unless he were man enough to see it thru in execution, taking the blame for failure, and letting whoever would do so lay claim to the glory in case of success, we should then see a faculty undeniably fit for the widest freedom—an irresistible engine for the best work. So, too, if no professor coveted notoriety or lowered the academic tone of his lectures to attract attendance and applause, whether by exploiting some novelty or serving up the things of superficial charm to please idle hearers, how much more boldly could we demand more freedom for each as well as for all. Plain common sense, open-eyed

sympathy, tolerance, modesty, balance—these are some of the old, undramatic virtues needed as guarantees that the free professor or the free faculty will be beneficently free. And yet let us not admit too much in this connection, for the fact that American faculties are not stronger in these virtues, and consequently deserving of more freedom, is not first of all the fault of our faculties, but of the presidents and trustees who choose them, or else the fault of insufficient resources.

Secondly, we must admit that universities are corporations and that education is a business. Let us do so heartily. Is it not time we got away from hand-to-mouth living and rule-of-thumb reckoning, and recognized that business has its laws, and that experts must conduct it? Under American conditions the management of a large university requires some stable corporate base in the form of trustees or regents, and one executive head, a president. Unless we are to go wavering and drifting, the primacy of president and trustees must be maintained. We cannot in this imitate any old-world system.

It is an immense gain that most of our universities are now so well managed on the business side. The wisdom of their investments has made more than one university treasurer's report a guide to prudent investors outside. The very complexities and annoyances in the terms of gifts and endowments, the variety of accounts and securities, and the calculation of probable revenues on less certain bases than many business enterprises possess have evoked surprising wisdom. The net result has been that our leading universities, so far as their hampering conditions permit, usually make every dollar do its work. Would any man in his senses suppose that American faculties could or would do as well?

Then the same corporation must use business sense in creating and maintaining a faculty. The best professors procurable for the terms that can be offered, selection and promotion on recommendation of the president, and the unifying of educational policy by means of the same sole executive head, are necessities of our situation. In all this our universities have been learning the lessons of modern business efficiency.

III

Nevertheless, if this is the sum of the proposition that university education is a business, our faculties are in a bad way, because it means the destruction of their intellectual and moral freedom by reason of the substitution of commercial for academic standards. That this is the chief menace at the present time to the self-respect and usefulness of our professors and faculties must be evident to all who know them. It is, of course, quite possible that we are in a transitional period, and that our faculties are moving with an inevitable trend of events. That, however, remains to be seen. But if it is so, we may be sure of one other thing, and that is a progressive impairing of academic standards and an ensuing degradation of our faculties to the condition of mere employees. So far as this happens, universities cease living and begin dying. To avert such a result, or even the slightest menace of it, must we not then fight again the old fight for our academic birthright, and take part anew in the μάχη ἀθάνατος for a reasonable freedom, intellectual and moral, personal and collective. Can university professors who are men give any but one answer to such a question?

The trouble with the theorem "education is a business" is that it is only a preliminary half-truth—the half-truth which, however, fills the eye and mind of our business men. The truth in it is that business method is the means, but not the end, of education. The other and better half is that "the business of a university is education"—the half which makes the first half valuable. And while the trouble in professors is that they are too often pitiably ignorant of the wholesome laws of business, the mate to this fact is that the business world is almost wholly ignorant of the laws of education. "Your plant is idle in the summer," said a British manufacturer to an Oxford professor. "You ought to put on a shift of men for that job." "The trouble with your plant," said one of our captains of industry lately, "is that your output will not stand business tests. Every boy you graduate ought to be your standard finished product. Otherwise, you should discard him

early in the course as waste." "Suppose it happens to be your boy?" he was asked. "And suppose this sample of waste turns out later to be a valuable by-product, or even the real thing? What then?" His answer was a prompt and creditable "I don't know." The region of his ignorance included the domain of college education. If, then, it be true that the very training which makes a man a professor dims his business faculties, is it not fully as true that the training which absorbs the life of a business man blinds his educational perceptions? How else, then, can this conscious or unconscious antagonism be mediated, except by recognizing that each has a lawful hemisphere? The hemisphere of business is secure enough from invasion, but for the hemisphere of education we badly need a new Monroe Doctrine.

Let us stick to our text, that the one business of a university is education. It will then be clear that the character and extent of business methods allowable in conducting a university must be governed by the kind of business to be conducted. It will also be clear that while the trustees or regents must strive to hold the university faithful to its trust and to secure what will make it efficient in its every part, the faculty alone is the body capable, or to be made capable, of the conduct of all educational business according to educational standards. The first dangerous invasion of commercialism is naturally made upon the corporation, the body which connects the university with the outside practical world, the body which is, therefore, most accessible to attack. One and another trustee in the laudable desire for efficiency is apt to think first of the efficiency with which he is most familiar, the efficiency of the bank, the railroad, the business house. Under this impulse he unconsciously veers away from the academic point of view. Soon others turn away; enough to make a working majority, and, naturally, the first point of common convergence is in centralizing the deliberative, as well as active, functions of the university, including much of the proper business of the faculty, and even of the trustees or regents, in the person of one head officer—the president.

I believe most firmly in high powers and, in grave emergen-

cies, irresistible powers for every university president, in quick control of everything at short range. But that is one thing, a safe and wise thing, provided always it is done in the environment of open inspection, quick accountability, close participation of all competent members of boards and faculties, and the most scrupulous jealousy in maintaining for every one the utmost freedom of initiative, both in speech and action, that can be used with loyalty. Otherwise, so far as sharing in the common business goes, and so far as personal usefulness is concerned, we make boards and faculties personally and collectively less efficient for the very end they are created to promote, and not the advantages, but the abuses, of the business world are ominously repeated in the form of "dummy" trustees and "dummy" professors.

IV

The profound change, then, now in progress in our American faculties is in the relation of the faculty to the president. The tendency, borrowed from the business world and increasing with the number of persons in the faculty, is toward individual and collective dependence on the president. And yet, so far as this does not curtail the self-respect of honorable professors by abridging their freedom to teach what they really believe, or to take part fully in the business of the faculty without prejudice to their standing or livelihood, even if they do not happen to agree in one or another important matter with the president, then, whatever is to be said against this increasing dependence as a danger to efficiency, it cannot be criticised as an attack on personal freedom. And it is here we think the test should be found as to what constitutes a professor's reasonable freedom. For, after all, the university must pull together, or it will pull apart. And, tho the head be not the whole body or the major part of the body, the academic body, like the human, must have a head, unless it is to be a lifeless trunk, and only one head, unless it is to be a monstrosity.

Is there anything, then, that needs to be suggested in order that the faculty, keeping to its own function and showing loyal deference to its head, may be kept from deterioration as the

sole organ whose function it is actually to conduct university education efficiently? Let us examine some of the suggestions that have been made:

1. That the president, as the responsible head, should initiate all important measures of educational policy. This means that he initiates such measures, either alone, or by putting them in operation by the action of the corporation, and thus imposing them on the faculty, or by introducing them in faculty after shaping them in conference with a committee of the faculty, or by proposing them first in open faculty. There is something to be said for even this extreme view. It is that the university has one clear policy, and that the president has untrammeled opportunity, with practically exclusive responsibility, for doing whatever he thinks should be done. Let us take a daring step and go so far as to say that there may be momentous occasions when the president must "go it alone" or face an absolute *impasse*. Let us trust such occasions may not occur, nor even occasions when the corporation and president may come to feel they must join to impose unwelcome laws on reluctant faculties. Such situations merely argue a university to be in a very bad way.

Introducing measures of policy after shaping them in a committee or department does of course recognize that there is value in expert counsel, and introduction in open faculty recognizes and welcomes the help and advice of all. These are natural methods for any president who wishes his policies to be understood by his colleagues, and the latter method is the one which insures the most cordial assent and, in the long run, the greatest efficiency, tho it must be confessed the penalty is sometimes the long-suffering endurance of professors who "darken counsel by words without knowledge." When the first reference of a measure is made from the faculty to its committee for digestion and formulation, rather than by first reference of measures in predigested form from the president and a committee to the faculty, both the sense of freedom and of responsibility are quickened in the minds of the faculty as in no other way. Yet, whichever of these various modes the president may use, the general thesis that the president should

initiate all important measures of policy has more against it that for it. Every measure thus proposed becomes an administration measure and seems to challenge at the outset the loyalty and security of every one who may not be able to agree with it. In such circumstances, the free utterance of real opinion, unless it happens to be in substantial accord with the measure proposed, becomes almost impossible. Self-criticism is one of the necessary educational functions of a university, in order that all its measures may have the preliminary test as to whether or no they are well considered on all sides and will work well when put in operation. Whenever, for any reason, the atmosphere of a faculty room is not friendly to this free utterance, the results are sure to be disheartening. Some professors will develop a cynical disregard of their duty to speak what they think, the weaker ones will be constrained to evasion, or even official hypocrisy, and all will exhibit in varying degrees a loss of interest in the welfare of the university, except in so far as their own personal fortunes are affected. This turns professors into place-holders and place-hunters. The logical end is the destruction of responsibility, and consequently of interest, on the part of the faculty in the important measures of policy on which the higher welfare of the university depends. Need it be added, by way of warning to those who believe in subjecting universities to the standards of the business world, that a faculty thus circumstanced is bound to become increasingly inefficient, and also unattractive to the best professors?

2. There is the suggestion of dual control by the president and faculty. This seems to me worse than the former; for, if the one seems to spell autocracy, the other spells weakness and discord. In case the president is a strong man, it means ceaseless friction between him and an oligarchy of professors. If he is a weak man, it means the presidency is reduced to a chairmanship by courtesy. In either event, it means structural weakness in the university and an unsteady attitude which keeps producing trouble inside and distrust outside.

3. Some may, perhaps, favor the idea of faculty ascendancy. For us, Oxford and Cambridge are its best examples. The professors there are virtually their own trustees, and they

choose their own vice-chancellor. The plan has one very great advantage—personal freedom in a higher degree than is known in our faculties, or even in Germany. But let any one who would introduce it here remember the abysmal differences that yawn between that situation and ours. Oxford and Cambridge are indeed more democratic in the matter of professorial freedom than we are. But it is a democratic freedom that rests upon an aristocratic presupposition, a freedom of the professorial caste resting on a tradition sanctioned by centuries of privilege, checked and counter-checked by the balancing of intercollegiate rivalry, and issuing in restriction of all initiative to a small council, elected, to be sure, but so constituted as to be changeable only very slowly. Admirably in accord as it is with the stable and soberly balanced love of liberty, "broadening slowly down from precedent to precedent," that has made England great, it is not a faculty model that can be produced here. But may it never perish there!

4. There remains to be considered what can be done under our own conditions to invigorate and perfect the faculty, not only to save it from the subtle poison of commercialism, but to make it do its educational business efficiently, with full self-respect and in sure harmony with the president and corporation. I believe the one thing to be done is to revive in full power the democracy of the faculty, with its free president honored supremely and followed steadily as the one natural, as well as official, leader of free professors. Only by following this path shall we be enabled to avoid the rank commercialism which believes in its heart that a university is something like a store where the trustees are the proprietors, the president the manager, the professors the employees, and the students the capricious customers.

And here we have to stop a moment to notice a futile remedy that appears in many forms. It is the remedy of committees and departments and councils and senates. We are organized to death. It is the "worship of machinery" all over again. Of course, these things have constant and even indispensable uses. Of course, we must know where things are, or we shall never find them. For the routine business, the ever-recurring

humdrum task, the mechanics and economics of our work, we shall always be needing these things—but always as our servants, never as our masters. If, behind the complex of our committees, we do not have the watchful criticism and active coöperation of the whole faculty,—if the faculty does not really understand what its agents are doing, or what their measures mean,—then the committees are virtually the faculty, and the faculty becomes little more than a listless and dwindling audience. This may possibly do well enough for routine business, but never for the understanding or coöperative execution of a great policy. For, unless a faculty actually controls all its parts and agencies, it cannot do its business in the best way, nor can it long maintain its just freedom.

Let us face the situation. American faculties are weaker than they ought to be, so far as concerns their power to maintain educational standards and to perform their own educational business. Their great growth has called for better organization, but organization has progressed too much without regard to the fact that the object is not organization, but education. The greater centralization of functions in the president, with all its advantages, has been at the expense of the free and proper exercise of the functions both of faculties and corporations. But this is not all. The decline of the old college ideal, which involved as one of its corollaries a definite liberal education by means of a few common studies of central importance, has been profoundly influencing the character of our supply of professors. Less and less emphasis has been placed on the general make-up of the man, and more and more on his specialized knowledge. The destructive theory that a professor is solely a teacher or investigator, and no longer a whole man, has shorn him of a priceless part of his academic citizenship. This view has been followed by its sequel, that the professor is concerned only with his specialty. And so not only have we been acquiescing in the view that his intensive special knowledge of one subject, or part of a subject, is properly accompanied by an extensive general ignorance of other subjects, but we have been cheerfully accepting professors who are almost totally blind in regard to the affairs of uni-

versity education. Professors have been going by such differing paths of preliminary training into their several bypaths of special study that they are not only getting far apart intellectually, but find they have no one common ground to which they may ever return and meet in full fellowship. It is the very satire of our history that, along with centralization of the presidential functions and the constitution of elaborate machinery to keep things working together, there has been a corresponding dispersion, from another cause, of the men who most need to stand constantly together in counseling for the best good of their universities. This must be changed, if our faculties are to consist more and more of men of all-round ability, men who are able to see and fit to solve larger questions with the moderation of wisdom. This means a renewal and better realization of the old college ideal which aimed to turn boys, not first of all into merchants or bankers or lawyers or professors as such, but into well-balanced, self-directing strong men. If this standard shall be restored to its primacy, we shall see in operation a force indispensable for the production of professors who are fit to be free. Meanwhile, recognizing the full rights of all parties involved, and recognizing further the need of beginning without delay, the all-important thing just now is to revive in vigor the democracy of the faculty. This means that it is the duty of every member to take part and make his voice heard in the business of the faculty, without arrogance and without fear, until such time as it becomes clear to his colleagues that he is not fit. Then he should subside. How shall we ever be educated as faculty members, unless this attempt is made? There will be some time wasted. Unwise suggestions will find utterance. They will meet with their natural corrective in the criticism of others. It will be well worth while. One priceless result will be that whatever the faculty does will be its own free act. With this will come the sobering influence of responsibility, to make all men who are not without sense use their liberty sensibly. Other good things will follow. A living tradition in things intellectual and moral will be established, a self-renewing tradition that will enable the university to exhibit to the world with some show of definite-

ness and continuity the ideals for which it stands. These are the only traditions that have a chance to outlast the men who make them.

To this end, committees and executive officers, such as deans, heads of departments, and chairmen, should really be the choice of the faculty, even tho the president names them. All committees and all officers used by the faculty in its service should be accountable to the faculty, and their reports and proposals should be freely debated.

But what, it may be asked, is to happen in case a faculty and its president do not agree? A presidential veto is no remedy here. So far as I can learn, it has never been used with satisfaction to any one concerned. What then? I see only one way. If, after debate, a faculty persists in its action, the right of the president, on recording his dissent, to take the whole matter for review to the corporation should be a matter of course, and unless the faculty is overwhelmingly against the president, a wise corporation will usually sustain him. But nothing will have been smothered. The voice of the faculty will have been heard, and responsibility will be placed on the president and corporation, where it belongs. Contrariwise, if the president accedes to some faculty action he does not approve, but does not think needs to be taken to the corporation, then again the responsibility is placed where it belongs. If it turns out that the action of the faculty was wise, the responsibility is rightly placed on the faculty, and the president wins approval for his considerateness. If it turns out that the action of the faculty was unwise, then again the responsibility is rightly placed on the faculty and the president's opinion gains new weight. We do not need more machinery. We need this common understanding. It will make steadily for justice, peace, freedom, and efficiency.

No university ever acquires true grandeur unless its faculty is made up of free men. No faculty discharges its duty happily and amply unless it is entirely free to propose and debate what it thinks right, and finally, no self-respecting faculty will do other than help its president, whether it happens to agree with him or not, so long as he devotes himself faithfully to his

arduous task. That task is to promote among his colleagues, his students, and all whom his university can influence, the intellectual and moral freedom of men. And so I return to the opening thought: The old college ideal is the true one. We need it more than ever to save our universities—presidents, trustees, professors, students, and alumni, and all whom they can influence—from the degrading personal and official servility that comes from commercializing our higher education.

ANDREW F. WEST

PRINCETON UNIVERSITY

II

SIMPLIFYING OUR SPELLING[1]

There is an old story of a Quaker who was present when a sudden misfortune befell a poor man, and when the bystanders were loudly expressing their pity. The Quaker listened for a little space to these sympathetic protestations, and then he turned to the person nearest to him and asked a pertinent question: "Thee says thee pities him. But how much does thee pity him? I pity him five dollars."

For many years almost every one who has given thought to the English language has bewailed loudly the present condition of its orthography, which is inaccurate and inconvenient, misleading in itself, and wasteful of time and money. Reformers have come forward with all sorts of schemes, and associations of scholars have made ineffectual recommendations. Circumstances happened to intensify the rooted conservatism of the two peoples who have the English language as their birthright, and the needed improvements in our spelling seemed no nearer at the beginning of the twentieth century than they had been in the middle of the nineteenth. Then Mr. Carnegie followed the example of the Quaker, and gave practical expression to his emotions. At his suggestion a Simplified Spelling Board has been organized, and he has undertaken to supply the sinews of war for an active campaign in behalf of a more reasonable orthography.

The growth of the two nations who speak English is one of the most obvious and one of the most remarkable facts of the nineteenth century. Five hundred years ago English was spoken only by the few millions who inhabited the British Islands. Today it is the language of two great empires. The number of those who now speak English is greater than the

[1] Reprinted by permission from *Harper's weekly*, March 21, 1906.

number of those who now speak German and French and Italian added together, and the rate of increase is also larger. If this rate of increase continues, the hundred and thirty millions who have English for their mother tongue in the first decade of the twentieth century will have swollen, in the last decade of this century, to five hundred millions. English bids fair to be the world language of the future, as French seemed likely to be two hundred years ago, and as Latin actually was two thousand years ago.

To be the fit instrument of universal civilization, English is singularly apt, in that it is an easy language to acquire by word of mouth, since it has got rid of the grammatical complexities which still encumber most of the other leading modern languages. It is not quite the grammarless tongue that it has been called, but it has far less grammar than any of its rivals. Its one striking inferiority is in its orthography. The spelling of English is unworthy of a practical race. It misrepresents the derivation of the words; it is wholly unscientific; it is as wasteful as it is absurd; and it is inferior to the spelling of French and of German, and far inferior to the spelling of Italian and of Spanish. No better example could be found of the inconsistency of human nature than the fact that the most business-like of races has been so long content with the most unbusiness-like of orthographies.

And yet, however wasteful and archaic and ridiculous English spelling may be, any attempt to alter it violently is foredoomed to failure. The English-speaking race is essentially conservative, and it declines to be driven too fast. It will resolutely refuse to give up the symbols to which it is accustomed. For this reason, if for no other, any scientific phonetic reform is absolutely impossible; it lies outside the sphere of practical politics. This is a fact that certain earlier enthusiasts failed to recognize; and as a result they were able to accomplish little. But altho phonetic reform is impossible, even if it was wholly desirable, improvement of some sort is possible, if too much is not demanded too suddenly. Indeed, improvement has been going on ever since the users of English began to pay attention to their spelling.

This improvement has been along the line of least resistance. It has consisted chiefly in the effort to make the spelling of a word conform to its sound by the omission of those silent letters which were plainly useless. Thus *musicke* has been reduced to *music* and thus *tragœdy* has been reduced to *tragedy*. Thus, at the present time, readers are being made more familiar with the curtailing of *program* and of *catalog* and of *tho.* *Music* and *tragedy* are now accepted by all; but there was a time when these two words were as strange to a majority of readers as *prolog* and *altho* are to many of us today. These are but specimens of that simplification by omission of which there have been thousands of instances in the past, unwelcome once, but used now without objection. And thousands more are awaiting adoption—*ryme* or *rime* for *rhyme,* for example, *aigret* for *aigrette, hemorrage* for *hæmorrhage, esthetic* for *æsthetic, maneuver* for *manœuvre.*

To hasten along the improvement of English orthography by urging the omission of useless letters, this is the practical task which has been undertaken by the Simplified Spelling Board. Simplification by omission—this is its platform; this is its motto. It is not an innovation; it is not a new principle; it is a principle which has been at work for centuries; it is a principle the application of which will arouse the least possible resistance and produce the most immediate results. To call attention to this principle will be the first duty of the Simplified Spelling Board, and to urge every user of the language to apply the principle for himself at his own convenience and to whatsoever extent he himself may see fit. To this simplification by omission and to a host of words simplified in accordance with this principle the Simplified Spelling Board proposes to lend the weight of its authority—of the authority of its several members.

It is a consequence of our regard for the common law that we like to rely on authority, and that we like to be assured of the precedents for our actions. In matters of speech we turn to the dictionary for guidance; and among the members of the Simplified Spelling Board are the editors of several of the foremost American dictionaries. In matters of science we look for guidance to the officers of our universities; and there are on the

board representatives of half a dozen of our leading institutions of learning. In matters of usage we like to be guided by the practice of men of letters; and certain of the foremost authors of America have accepted election to this body. In matters subject to dispute we desire to hear the opinion of the public press; and on this board are to be found the editors of periodicals of high character. And in matters of practical business, we look to the practice of men of affairs; and there are also business men on the Simplified Spelling Board. The membership is not yet complete, but it now includes Chancellor Andrews of the University of Nebraska; Justice Brewer of the United States Supreme Court; President Butler of Columbia University; Mr. O. C. Blackmer of Chicago; Mr. Andrew Carnegie; Mr. S. L. Clemens (Mark Twain); Dr. Melvil Dewey; Dr. Isaac K. Funk, editor and publisher of the Standard Dictionary; Mr. Lyman J. Gage, ex-Secretary of the Treasury; Mr. Richard Watson Gilder, editor of the *Century magazine;* Dr. William T. Harris, United States Commissioner of Education; Professor George Hempl of the University of Michigan; Colonel Thomas Wentworth Higginson; Mr. Henry Holt; Professor William James of Harvard; President David Starr Jordan of Leland Stanford University; Professor Thomas R. Lounsbury of Yale; Professor Francis A. March of Lafayette; Professor Brander Matthews of Columbia; Judge Morrow of the United States Circuit Court, California; Dr. Benjamin E. Smith, editor, and Dr. Charles P. G. Scott, etymological editor, of the Century Dictionary; President H. H. Seerley of the Iowa State Normal School, Cedar Falls; Mr. Charles E. Sprague, president of the Union Dime Savings Institution; Professor Calvin Thomas of Columbia; Mr. E. O. Vaile, lately editor of *Intelligence;* Dr. William Hayes Ward, editor of the *Independent,* and President Woodward of the Carnegie Institution of Washington.

This new body is not an irresponsible collection of cranks and of faddists; it is a representative committee of American citizens, who believe that the time has come for an organized effort to make English a more fit instrument for the hundreds of millions who are soon to use it. They are practical men,

who propose to work without haste and without rest, not asking too much, but gaining here a little and there a little. They are determined, above all, to awake public interest in the necessity for a better orthography. They propose to call attention to the many words in regard to which usage is unsettled; and they intend to urge the adoption of the simpler of the two forms. Perhaps most of us are in the habit of writing *blessed* and *stripped*, but we are not unfamiliar with *blest* and with *stript*, older forms, preferred by not a few of the poets. Tennyson liked to write *crost* and *dropt;* and Lowell and Landor had each of them similar likings for the older and the simpler form. Perhaps the English spelling that was good enough for Tennyson and for Lowell may be acceptable to other less-gifted writers.

The Simplified Spelling Board will try to make everybody understand that there is not now and there never has been any general agreement as to English spelling, or any authority having the right to lay down any rules for it. There is divided usage now in regard to hundreds of words, and there has always been divided usage. There is no special sanctity in either *musicke* or *music, æra* or *era, toilette* or *toilet, phantasy* or *fantasy, sovereign* or *sovran, comptroller* or *controller, pædagogue* or *pedagog, technique* or *technic, plough* or *plow, though* or *tho*. Every one of us has a right to his own opinion; if he prefers cumbersome complexity, he can have his own way; and if he would rather employ the briefer and more direct spelling, he is within his rights as a human being.

The existing diversity of usage is far wider than those suppose who have given no attention to the subject. Various bodies have resolved to adopt such simpler forms as they themselves desired. The United States Government has a board on geographical names, which has cast out many needless letters, spelling *Bering* Strait, for instance. The National Educational Association some years ago formally adopted a list of twelve simplified spellings, including *program* and *catalog*, now widely familiar, and *tho* and *altho*. The American Association for the advancement of Science decided years ago to omit the final *e* of certain words where its retention served

no useful purpose; and this is why we find in scientific writings *morphin* and not *morphine, antitoxin* and not *antitoxine.*

To urge the adoption of the simpler of two spellings now contending, and to advocate further simplification by the omission of other useless letters, these are the immediate aims of the Simplified Spelling Board. And it purposes to employ all the usual machinery of a reform movement—a central office in New York and an organizing secretary. It expects to conduct an active campaign with pamphlets and with addresses.[2] It hopes to win over the support of organizations in sympathy with progress, of teachers and of advertisers, of publishers and of printers, of men of science and of men of affairs, of all who are awake to the immense waste of time and of effort due to our present spelling, and who can see how much of a hindrance this is to the speedier adoption of English as a world language.

BRANDER MATTHEWS

COLUMBIA UNIVERSITY

[2] Its publications will be forwarded to any one who will send a postal card of inquiry to the Simplified Spelling Board, 1 Madison Avenue, New York.

III

THE EDUCATED MAN[1]

If I am asked to define an educated man, I should say that I mean by that term a man whose intellect is trained to coöperate in the purpose of human progress; and I fancy that, if you come to think about it, you will see that not much else than this, and not much less than this, is what you mean by an educated man. It is only to put the same thing in other words, to say that an educated man is one who consciously and deliberately holds an intellectual ideal of what he himself and other men are capable of becoming, and who has, in some measure, the knowledge and the skill to put this ideal into practice. Thus you see, according to my definition, a man may know how to read and write and do sums, and still not be educated. He may read the sporting news, and even write to the newspapers, but, if he takes life as he finds it, if he is content to live from hand to mouth in his business and his pleasure, if he is without an intellectual ideal, consciously held and deliberately striven after for himself and for his kind, I do not call him educated. Education means the holding and the striving after an intellectual ideal. Or, in the higher region, a man may be a specialist, with an acutely trained and perfected faculty, but, if he has not a general ideal enabling him to give his special subject its place in human progress and human life as a whole, he remains a trained specialist rather than an educated man. Or, once more, a man may have ideas, but he may be so far from any right knowledge of what human history is, or what the world is, that he has no power to correlate his ideas with reality, and his ideas remain chimeras. An educated man, I repeat, is a

[1] An address delivered to the members of the Birmingham and Midland Institute by the Right Rev. Charles Gore, D. D., D. C. L., Lord Bishop of Birmingham, President of the Institute. Reprinted from *The School world*, March, 1906.

man whose faculties are trained to coöperate in the law of progress.

What departments of knowledge or thought are necessary to make what in any real sense can be called an educated man? First of all, an educated man must know something of history. An Englishman must have some real idea of how this country of ours came to be what it is, of the races which compose our British people, of the various invasions from without which have infused strength into it, of the influences and the struggles which have given us, first, unity, then liberty, then wealth, then empire. But also we must have some standards of comparison. It is not enough that I should know, in some outlines of reality, the history of my own country. I must know, in a measure, how other races have, in the past, attained a foremost position in the world, and then for more or less assignable causes have lost it. An educated man is a man whose faculties are trained to coöperate in the law of progress. He must know, then, how in fact a man, or Englishman, has advanced to become what he is. But he must know also how men of other races have advanced in the past to positions of preëminence and of power like ourselves; and how, in the past, positions like that, once won, have been lost, and by what causes. You perceive my meaning? Progress is a precarious thing, a thing that depends on coöperation with certain laws, physical and moral. The educated man is one who can coöperate in such a law of progress because he has some more or less accurate ideas as to the way in which men in the past have become great and have declined. Or, once again, he must have certain ideas, more or less distinct, of the different kinds of civilization which, in the past, have come into being among men—of the chief civilizations, at any rate. He should look back and know that there once lived a Greek race which brought into being a city life of wonderful intensity and brilliant intellectual distinction, and how, when the Greek cities sank under the domination of other men, that intellectual race survived and spread abroad, and by their language and the diffusion of their character and thought influenced the whole world. And how another city, on the neighboring peninsula, the city of Rome, from a city grew to

be an empire, and gave the world ideals of government and of law. And a man should know something of the civilizations which, in much more recent times, reached their climax and decayed—he should know something of the splendid tragedy of Spanish civilization. And he should know something of what is happening in contemporary times in other countries, of what is the quite recent history of Germany or France. An educated man need not be a scholar. To get real and true ideas of human history, of the kind that I have described, a man need but read quite a few books if he reads the right ones. And, what is more important, having read a book, he turns it over and over in his mind, revolves it, and dwells upon it, until he has got certain principles, like hooks, in his mind, on which he can hang the variety of facts which, from time to time, come under his notice; and hold them together as illustrations which gain distinction and clearness in his mind, and guide his thoughts; so that he feels he knows something of the way in which men become great, and something of the way in which, having won their greatness, they can lose it.

Then, also, an educated man must know something of modern scientific method and achievement. I shall speak quite briefly about this department of education, for fear of making too apparent my own deficiency. An educated man need not be a specialist, or even an adept, in any single branch of science; but a man cannot be—in any tolerable sense—educated, unless he has got in his imagination and knowledge a more or less clear sense of what scientific inquiry has accomplished and is accomplishing. More than that, he must know, with more or less definiteness, what the method of science is; and that—I believe I am speaking the truth—he can only get by a systematic study of some one science, or, more imperfectly, but with some reality, from a careful study of some one or two really great scientific writers such as he can understand. The result of this kind of study to a man, who may be far short of anything that can be called a scientific man or an adept in science, is that the world, in his imagination, becomes the scene of great and constant forces which admit of being reverently explored, and so guided and directed that they may be made to minister,

to an almost indefinite extent, to human progress. You know, of course, Lord Verulam's great maxim—that sort of prophetic word by which he interprets so much that is greatest in modern scientific investigation—that "Nature can be controlled by being obeyed." That means that Nature is a scene of great and constant laws which will laugh at you if you seek to violate or ignore them, but which, in proportion to the reverent study you give them, can be guided or controlled to infinite possibilities of human convenience, advantage, and progress. Well, thus the imagination of the educated man is enriched and enlightened; and the effect of this kind of conception, if it once gets hold of a man—not only of his mind, but of his imagination—is enormous. It lifts a man altogether out of that practical acquiescence in things as they are which is so enervating. It fires his whole being, possesses his whole outlook, with the idea of knowledge yet to be won, power yet to be acquired, transformations yet to be made.

There is one other region of feeling, and that the vastest, on which I will say a word also. I think a man may be educated in history and educated in science and still lack something, vague, but of extraordinary importance, without which a man can hardly claim to be called a really educated man. I think an educated man, by means of art, or music, or poetry, or by whatever means, must nourish in his soul a sense of the Eternal—a sense of that "which was, and is, and evermore shall be," lying beyond all the changes in human history and natural progress—"the Eternal not ourselves," in which we live and move and are, which is both beauty and power, righteousness and goodness. This transcendental emotion is not any definite creed; it is possible to the adherents of almost any conceivable creed: it is common to Herbert Spencer and Hegel, to Plato and Saint Paul: but without it a man is without something so essential to human worth that he can hardly be called educated. You know what it is, when you are worried, and occupied with the infinite details of life, and have the opportunity of listening to some great music, how slowly, if you can be quiet enough to surrender your spirit and lend a listening ear to the music, there steals upon your soul a sense of the

eternal harmony—something greater than the discords and the details of the life in the midst of which we live. Or, it may be that some single line of poetry, with its unspeakable truth, recalls you to the depths which lie in Nature. Or it may be by some work of art, only a little color and just the outline of some figures—a mother and a child—that, if you have got the quiet eye to look at it, there is smitten into your soul a sense of the eternal and fathomless beauty which there is in common things. Many are the channels by which to different minds sound and shape and color and motion impart and deepen the sense of the Eternal.

I have selected three elements in education: those that appear to me most essential to make up the character and mind of an educated man—those without which—without, I would say, each of which—I do not think a man can really be called educated. They are possible for most of us; they might be possible for all. We may all acquire some real knowledge of history, some real knowledge in one particular branch or department of scientific method and attainment, some cultivation thru music, thru poetry, thru art, thru Nature, of the sense of the Eternal, interpreting man and Nature in eternal aspects. I have had in view the education possible to an ordinary man, not a professed student. A man to become educated need not have time to read much if he read the right books. I would say to those of you who are young: You will probably live seventy years or so. Well, it is quite well to be prepared to live much less; but plan your life as men who will live for seventy years. Plan your intellectual life so. You cannot hope to become educated unless you lay out, and from time to time reform and remodel, a scheme of your educational life—a scheme of education for a lifetime; unless you write down questions to which you do not expect to be able to find the answer this year or next year, but of which you hope to get the answer ten years on. Plan your educational life as a whole, and then make steady progress year by year, and be very careful that you read the right books. If I had my way, I would have attached to every big public library a department of two or three well-informed men, who must be also sensible, who should have no other

business than that of advising students what books to read; because nothing in the world matters so much to a young man or young woman as to be put in the way of reading the right books.

I will say three words in conclusion. They shall be brief words. First, an educated man must have a standard of intellectual excellence. He must know what is first-rate—and you can only get that knowledge by reading the best books; and, I venture to add, by reading those which are not of your own time merely, but which have a certain remoteness and the character of established classics. Of course, he must read some books of poetry. Every now and then I come upon a person who, I think, really has never made any serious attempt to read any poetry at all. Occasionally it dawns upon me that they really are better acquainted with Shakespeare in Germany than we are in England. Well, besides poetry, there are certain books which mark epochs—which are full of great dominant ideas. The first book of Hooker's *Ecclesiastical polity,* for instance, opened to the English imagination the idea of law. Milton's *Areopagitica* fastened upon the English imagination the idea of liberty. Burke's speeches are full of the great idea of what government means. Now these are all books which are masterpieces of style. There you see what great thought is, wedded to the greatest power of language of which English is capable. I would say to any one who wants to be an educated man: Don't be satisfied without reading some of the greatest books in prose and poetry. And, I would add, the great romances. Don't be content without having read *Don Quixote* (which is a masterpiece, and also a classic in the English translation), and *Gulliver's travels,* and *Robinson Crusoe,* and *Pilgrim's progress.* I have not gone beyond England except in one case, and there, as I say, the translation is a classic, too. But an educated man ought to know some one language besides his own; and, I would add, apart from all question of its religious value, no man who would be educated ought to be content without being familiar with the Bible.

Then certainly an educated man, besides a standard of style —the sense of what is really great that is gained from reading

great books of classical standing—must gain an apprehension of what real knowledge is as distinguished from mere clever guessing or rhetoric. I think you might almost define education as a growing distaste for rhetoric. For example, a man who has read carefully and thoroly three or four volumes among the great works of Charles Darwin has gained a permanent possession for his mind. That is to say, he has learnt what real distrust of rapid conclusions means, real sifting of evidence, real scientific caution, coupled with a wide outlook. If he has done that, he will always be very distrustful of any one who begins a statement by saying: "I suppose it will be agreed on all hands." Indeed, I should like to say that whenever you hear any one say that, you almost take it for granted he is going to say something which is very doubtful. Or, again, you can get the same distrust of rapid conclusions, the same standard of strict inquiry, from books of history, from reading a writer like one of those who occupied this chair a few years ago—Dr. Creighton. Read his books, and you will be able to see what real love of truth is; how it sifts and discriminates, how unwilling it is to go by its own inclinations. The educated man has a power, a gradually growing power, of distinguishing between careful conclusions and large rhetoric.

And then, lastly, the educated man, tho he may, or must, have his own special line, and tho omniscience is the foible of only the very ignorant, yet must have some general sense of the unity of knowledge and of the place which his own special study holds in the whole of knowledge.

IV

THE TREND IN AMERICAN EDUCATION[1]

The keynote of American life is democracy—social democracy. I say social democracy, because England is politically more democratic than the United States. On the other hand, England inherits conceptions of caste of which we know nothing. The English churchman prays to be content with that station in life in which Providence has placed him. On the other side of the water, schools for the poor are free; the rich must pay for their education. Hence the great preparatory schools of England, as well as the venerable universities, are for gentlemen's sons, and only gentlemen are wanted in the church, at the bar, or in the army and navy.

The founders of this republic thought it a self-evident truth that all men are created equal. The settlers of New England left the old world in search of religious freedom—to found a new home in which each might worship God in his own way. They were so intensely in earnest that they were willing to suffer for the faith, and so conscientious that they were willing also to make others suffer for differing with them.

They were stern men, those ancient fathers of New England, and they had little faith in the natural course of human development. Five years after the establishment of the Massachusetts Bay Colony they founded the Boston Latin School—"younger" and more vigorous today than at any time in its history. A letter written at the time says: "After God had carried us safely to New England, and we had builded our houses, provided necessaries for our livelihood, rear'd convenient places for God's worship, and settled the Civill Govt.: one of the next things we longed for, and looked after, was to

[1] Address delivered at the exercises celebrating the founding of the College for Teachers, of the University of Cincinnati, November 21, 1905.

advance learning and perpetuate it to posterity, dreading to leave an illiterate ministry to the churches, when our present ministers shall lie in the dust."

Next, in 1640, they founded Harvard College—also "younger" and more vigorous than at any time in its career. Then, two years later (1642), they urged selectmen to see that parents provided for the education of all children to the extent of teaching them (1) to read, (2) to understand the principles of religion, (3) the capital laws of the colony, and (4) to engage in some suitable employment.

In 1647 the General Court of Massachusetts passed its epoch-making act providing for public instruction: "It being one chief object of that old deluder, Satan, to keep men from the knowledge of the Scriptures, as in former times by keeping them in an unknown tongue, so in these latter times by persuading from the use of tongues, . . . that learning may not be buried in the grave of our fathers in the Church and Commonwealth, the Lord assisting our endeavors, etc., etc. . . . It is therefore ordered" . . . that there be (1) one teacher for every fifty householders, to teach reading and writing, and (2) one grammar school when a town reaches one hundred families "to instruct youth so far as they may be fitted for the university."

From such a beginning has come our great school system, potentially the mightiest engine for good in our national life, actually the most expensive single department in our civil government. It should be noted, however, that in those early days "reading and writing" were the means of training the common man; the substance of his education consisted of religion, civil government, and suitable employment—all of them factors of every-day life in the home, the church, and the community. Until 1692 only church members were freemen and allowed to vote. Down to the nineteenth century there were no public elementary schools, as we know them. The schools that did exist were designed to fit boys for college, and the colleges were but stepping stones to leadership in state and church.

So it has been from the beginning of human society. Schools for leaders come first, because no society can long endure

that does not have capable leaders—leaders in the field and leaders in the forum. The masses of the people may be trained —and trained successfully, too—to maintain civil order and social stability by the institution of slavery, or bondage, or serfdom, or by social customs which impose class distinctions upon all. With leaders trained to lead and a people trained to obey, you have the prime factors in successful national life—successful, at any rate, from the autocratic or paternal standpoint. There is no call for universal education until in the course of human events men—individual human beings—have rights which cannot be denied them. Schools for the common people arise when it is recognized, for example, that each person has a soul to save, or when the form of government gives to each a vote.

The trend in American education for nearly two hundred years was to the advantage of those who were to be our leaders. There was first the Latin school, preparatory to college, and then the collegiate course preparatory to the ministry and to law—*i. e.*, leadership in church and state. Gradually American life began to demand trained physicians and engineers. Perhaps, in one sense, there had always been such a need, but consciousness of the need was not roused until the discovery of the manufacture and transmission of power thru steam some hundred years ago. A new era was ushered in with the nineteenth century.

1. A government guaranteeing equal rights had been firmly established, and the old causes for contention were thus removed.

2. Freedom of worship was assured to all. Denominational control of education gave way to state control.

3. Increasing immigration began to make for a cosmopolitan population. Life was growing more complex; less dependence could be placed on domestic training.

4. Advances in science led to a new industrial order. Before 1800 men could use only such power as they had in their own bodies, in domesticated animals, in moving air and running water. How impotent such means to the settling of the great West and the upbuilding of a great nation!

These are some of the influences which converted us, inside the confines of a single century, from a provincial and agricultural people into an industrial and commercial nation. The result was that the old education, however successful it may have been in producing great preachers and men of affairs, speedily became inadequate to meet the demands of an industrial and commercial age. A process of differentiation was soon noticeable within the college, and new professional schools sprang into being. Take, for example, the year 1850 as a turning point. Before 1850 we had in all some 10 law schools, 37 medical schools, 2 schools of dentistry, 3 engineering schools, 2 schools of agriculture and mechanical arts. We have since increased the number to 86 law schools (50 of these having been established between 1876 and 1900), 156 medical schools (86 established between 1876 and 1900), 56 schools of dentistry (47 established between 1876 and 1900), while engineering schools and schools of agriculture and mechanic arts are everywhere.

And the end is not yet. We are building rapidly schools for nurses, for artists, for railway superintendents, for architects, for housekeeping and homemaking, for journalists, and even for philanthropists. Then, too, look at the differentiation within the old groups. Medical schools are today professional or graduate, medical or surgical, allopathic or homeopathic or eclectic. Engineering has subdivided into civil, electrical, mechanical, chemical, sanitary, and so on thru the list as given by many of our great technical schools.

There is, as I have said, no end to this development, and there can be no end to it, so long as human needs increase or differentiate or become more complex. The greater the need of trained leaders the more positive the tendency to supply them. When we cease to grow and expand territorially; when our wants become fewer or our ambitions and susceptibilities becomes less keen; when we stop pushing onward—then you may confidently predict a period of ease and comfort and satisfaction with existing educational opportunities. But so long as the United States holds its place among the great world powers, so long as our states and cities have ideals to which they have

not attained, so long as individuals have ambitions which are not satisfied, so long will educational affairs remain unsettled and unsatisfying. The millennium which many school boards and some educators long for—that age in which the public will not ask for better schools and more of them, and when school superintendents and college presidents will cease to vex their teachers with requests to do some new thing—that millennium, I say, will mark the decline and fall of the great American Republic. It will be the end of a democratic fiasco in civil government, the bursting of the bubble which has tantalized European autocrats for a century with some semblance of reality, the end of the most stupendous failure the world has ever seen.

No, there can be no rest, no halt, even, in the progress of education. It is not something which can be stopped and started at will; it is not a tangible reality which can be fixed on a plate for microscopic examination at any time. It is a vital process, indissolubly bound up with our social and civil life. Once you catch it, or check its course, you will find in your hands merely lifeless clay, a cadaver, in which the vital spark is extinguished.

The trend in American education has been not only in the differentiation of professional schools, but also in the courses of study and subjects taught. I have no time to point out the changes that have taken place even within a generation in our American colleges and universities. Down to 1800 the entrance requirements to our best colleges were Latin, Greek, and some times a little arithmetic " as far as the rule of three "; and even in Latin and Greek scarcely as much as we now read in three years in a good high school. But between 1800 and 1870 eight new subjects were added to the entrance list, " whereas during the century and a half prior to 1800 the only addition of any consequence was elementary arithmetic."

I have no need to remind you that the modern college offers far more than any one boy can take or should take. Hence the struggle over classical studies *versus* scientific studies, the establishment of " modern " courses, the device of multiplying Bachelor's degrees, the elective system, and all that train of

controversies which have vexed the souls and spoiled the tempers of many, many college professors.

A survey of the field discloses much to be thankful for. We have made a fair beginning in our higher education—a beginning, I say, because there is not in this country today a college, or university, or professional school adequately equipped for the work it is attempting to do; there is not one of the great plants, however much they may cost the public for maintenance, that is being conducted efficiently or effectively, simply because the public does not yet appreciate the worth of the work they are doing or realize that the greatest economy in operation is impossible when defective machines and ill-paid workmen are put to a task that demands the best in everything —the best of equipment, the best of men, and the best of service. Some day, I hope, the American public will realize that our school system, from kindergarten to university professional school, is an engine so expensive that we cannot afford to keep it idle a part of the time, or run it except with its maximum load; an engine so expensive, too, that we cannot afford to intrust it to the hands of inexperienced or half-trained engineers. No business man would for a moment tolerate the waste and inefficiency in his affairs that we all know exists in education today.

I wish to push the indictment one step farther. Our educational system is not only wasteful and inefficient because it is operated at "low pressure," but it is unfair in that it does not do what the founders of this republic meant that it should do. *It does not give equality of opportunity to all.* This may seem surprising, particularly as we have been boasting for a century of our American liberty, fraternity, and equality. It is the boast, too, of most Americans that our great public-school system—the greatest thing on earth—provides alike for every boy and girl taking advantage of it. This is half true—and dangerous, as all half-truths are. The fact is, the American system of education grants equality of opportunity only to those who can go on to the college and the university. It takes little account of the boy—and less still of the girl—who cannot or does not wish for a higher education. Those who "drop out" at the age of twelve or fourteen, compelled to earn a

livelihood, have missed their opportunity. But why? Do we in America have need only of professional men and "men of affairs?" Are those who pay the taxes and do the rougher work of life to be denied opportunity for self-improvement? Are only those who can afford to stay in school to reap the advantages of education? In a word, what are we doing to help the average man better to do his life-work and better to realize the wealth of his inheritance as an American citizen? These questions raise the problem of vocational training for those who must begin early to earn their living. It is, in my judgment, the greatest problem of the future, and one which we may not longer disregard and yet maintain our standing as a nation.

Altho we have consciously done next to nothing to give the average man a fair start in his life-work, unconsciously we have been putting forth efforts to meet his needs. A century ago the elementary school was the first step in the way to college. So it is today, but with this important difference: the curriculum of the old-time school was religion and the three R's. The time came when religion had to be put aside. That left the three R's—an impossible curriculum, notwithstanding the praises of some good people who do not think for themselves, but have an unquenchable desire to think for other people. You cannot read without reading something; and you cannot reckon without problems in something. The colonial schoolmaster, like the modern parochial schoolmaster, made religion the substance of his instruction. The modern advocates of the simple curriculum of the three R's must choose between the "three R's" directed to something and nothing at all.

The fact is, the moment religion was put aside something else had to come in. We put in English literature, history, civics, science, and music—in a word, the course was enriched. Yet the common sense of our American public insisted on further enrichment for the sake of those who needed a more practical training. Hence the introduction of drawing, manual training, cooking, and sewing—fads and frills, if you please, but nevertheless an honest (if unintentional) effort to accord to the great mass of our children vocational advantages similar

to those enjoyed by the few who could go on to higher grades of vocational training. It is precisely the same sort of development (from the simple to the more complex; from the general to the specific; from the purely disciplinary to the practical and vocational) that we have observed in the field of higher education.

But the end is not yet. The movement is only begun. The trend is unmistakably toward still further differentiation and still more complete adaptation to the needs of every-day life. The distinctive peculiarity of American education from the beginning almost to the present day is its *selective* character. Like the Scottish schoolmaster, we have rejoiced more over the one "lad of pairts" who somehow gets ahead, despite our instruction, perhaps, than over the ninety and nine who need our help. We boast of an educational ladder that reaches from the gutter to the university, and we see nothing amiss in making our elementary schools preparatory to the high school, and the high school preparatory to the college and university. In other words, that which few need all must take.

No other great nation that I know of thinks it worth while to train everybody for everything—and nothing!—and to do it at public expense. Germany has its great system of schools leading to the university and to professional life, and any boy who will may go forward as surely, if less easily, than with us. But Germany has, too, a system of public education which connects direct with practical life when the boy or girl leaves school at the age of fourteen. To be sure, it is little more than a beginning that can be made in training for practical life before the age of fourteen, but in the past twenty years astonishing progress has been made in supplementing the common school training and continuing it over a period of two, three, or four years after the boy has left school and while he is learning a trade. In making Germany a dangerous rival of England and the United States in the markets of the world, the continuation schools are doing quite as much by supplying the skilled workmen as the technical institutes and universities are by sending out engineers and scientific experts. If you want a chance to do some hard thinking and self-criticising, send to the Depart-

ment of Commerce and Labor in Washington for Volume 33 of the Special Consular Reports just issued (1905) and read that able treatise of 314 pages on Industrial Education and Industrial Conditions in Germany. If that does not provide food for reflection there is something wrong with you—or with me.

My conviction is that, instead of being satisfied with our school system in this country, we should be thoroly ashamed of it—ashamed not of our good schools and the good work that is being done, but ashamed that we as a people are being contented with so restricted a system of public education and so narrow a curriculum. We accept the politician's dictum that we are too poor to spend more than we do on education, when the fact is we are too poor to spend so little. More, much more than we now spend on education would be money in our pockets if only we knew how to spend it aright.

France, heavily burdened as she is, maintains in addition to her great system of elementary, secondary, and higher schools (including universities, professional schools, and schools of science) the following institutions for teaching the industrial arts:

1 National Institute of Arts and Trades.
1 Central School of Arts and Manufactures.
8 High Schools of Commerce.
1 Advanced School of Commerce.
1 Commercial Institute.
4 National Schools of Arts and Trades.
1 National School for Training Superintendents and Foremen.
2 National Schools of Watchmaking.
4 National Professional Schools.
26 Commercial and Industrial Schools for Boys.
6 Commercial and Industrial Schools for Girls.

In addition to the foregoing the municipal bodies of towns of any importance have opened professional schools for the elementary teaching of trades, industries, or arts (design, weaving, lacemaking, dressmaking, dyeing, electricity, bookkeeping, and stenography). There are also numerous private schools and societies for the improvement of the artisan, which are well attended.

What France is doing is also being done—and done better in some respects—by Belgium, Holland, Denmark, Sweden, Switzerland, and England. In order not to over-emphasize our remissness, I will cite only one more example of a country which is poor and knows it—Würtemburg.

" Würtemburg is a country of 2,081,000 inhabitants, with a revenue of nearly ten dollars per head of the population. Besides elementary and secondary schools for all, it supports outright or largely subsidizes: one state university, Tübingen, of honorable history and, in some branches of instruction, of world-wide fame; one technical high school (practically a technical university), and one royal building trades school, both at Stuttgart; two special technical schools (Reutlingen and Schuenningen) for textile and mechanical industries respectively; three weaving schools, two weaving workshops, and one knitting school, scattered about the kingdom; 231 industrial improvement schools in towns and villages; improvement courses wherever they can be justified by the attendance, providing special instruction for braziers, joiners, painters, metal-workers, bootmakers, etc.; 18 improvement schools for women in which serious instruction is given with a view to preparation for household management or independent industrial occupation; one fully equipped commercial college at Stuttgart, and two commercial improvement schools, at which instruction is given, morning and evening, outside of business hours; one elaborately organized agricultural high school at Hohenheim, and numerous farming schools thruout the country; one art school, and one art trades school for the training of artistically skilled workmen in branches of industry connected with art."

There are two sufficient reasons for our not following Europe's lead: (1) we don't want to, and (2) we don't need to. We don't need to because life in this country is still easy. It isn't half settled yet. Some day we shall have five hundred millions here. I suppose we have land enough, and land good enough if tilled properly, to support a population ten times as great as that we now have. But even fifty years from now, at our present rate of increase, we shall begin to appreciate

what competition means. What will it mean when necessity compels us to use at its best every square foot of land we own? Then the man who will not work surely may not eat. And if he would preserve American traditions of decency and competence, he must work harder and more effectively than the man of today has to work.

It must be obvious to any fair-minded student of our educational system that we are doing next to nothing either to ward off threatened dangers or to prepare for those which are bound to come in future. Instead of doing the practical thing we, a so-called "practical" people, are content to produce "cuteness." The business world expects every man to do his duty—but it is very obvious that his first duty is to hustle and to get results. I once heard a colored preacher in the South illustrate the spirit of the age in this wise: "Once we measured time by grandfather's clock, which said, 'Ever—forever, never—forever'; nowadays we use a Waterbury, which says, 'Git thar—git thar.'" Our aim is to "git thar"—in our college sports, in professional life, in business; everywhere we count on winning, honestly, if possible; dishonestly, if necessary, and if the chances of getting found out are not too great.

Contrary to the findings of some critics, I believe that our schools are partly responsible for confirming us in our besetting sins—not by what they teach, but in the prevailing methods of teaching. The fact is, we do look for results and are not overparticular how these results are obtained or whether they are just right or not. We are too easily satisfied with a plausible rendering of a foreign text; we are prone to measure proficiency by the amount of work done or the time spent in doing it, rather than by excellence of accomplishment or accuracy of method. We encourage guessing, and the prize too often goes to him who shows greatest skill in concealing his ignorance. In a word, we are too easily satisfied with appearances and attach too little weight to the moral effects of doing honest work.

There is another reason, as I have said, why we do not choose to follow European methods of education: We don't want to. We don't want to because we are not bound by social

traditions. Our society is a social democracy. Our schools are designed to grant equal opportunity to all. In most other countries, England included, the school system is deliberately intended to keep some down while helping others up. So long as our mode of government endures we cannot shut the door of opportunity in the face of any citizen. It is the greatest experiment the world has ever seen, and while there are many who would gladly see it fail, it is our bounden duty to make it succeed. It would be presumptuous to say, after only one century of trial, that success is already assured. This is only the beginning. We are just coming to realize some of our blessings, as we see more clearly for the first time some of our dangers.

How can a nation endure that deliberately seeks to rouse ambitions and aspirations in the oncoming generations which in the nature of events cannot possibly be fulfilled? If the chief object of government be to promote civil order and social stability, how can we justify our practice in schooling the masses in precisely the same manner as we do those who are to be our leaders? Is human nature so constituted that those who fail will readily acquiesce in the success of their rivals, especially if that success be the result of "cuteness," rather than honest effort? Is it any wonder that we are beset with labor troubles? We are, indeed, optimists if we see no cause for alarm in our present social conditions; and we are worse than fools if we content ourselves with a superficial treatment of the ills that afflict us. Legislation may do much to help us out of trouble, but it is only education of the right sort that can permanently keep us from ruin. There never has been a time when we were more in need of sound education, and in the struggle for existence that is yet to come we shall need a better education than we conceive of today.

There is one educational principle that is peculiarly American. It is that every man, because he is a man and an American citizen, should be liberally educated so far as circumstances will permit. A man, according to our Magna Charta, is entitled to life, liberty, and the pursuit of happiness. The first business of the schools is to make life worth living, liberty worth striving

for, and the pursuit of happiness something for which no man need be ashamed. We need, in my opinion, one more article in our educational creed. It is this. In making a man, make him good for something. It is a practice easily recognizable in the history of our universities and professional schools.

The next step is to see that the common man is equally well provided for. A beginning has been made in the enrichment of the course of study in our elementary and high schools, thus giving a choice of studies and better preparation for life if the pupil knows how to choose wisely; in the introduction of the natural sciences, manual training, and the domestic arts, thus giving some acquaintance with the industrial processes underlying our civilization if the subjects be well taught; and finally, in the differentiation of the school courses and school work whenever the future vocations of the pupils are definitely known, as in the negro schools of the South, the county agricultural schools of Wisconsin, and the trade schools of some of our eastern cities.

But all this is only a beginning. At best but little can be done before the age of fourteen, but that little can be of the right kind. In teaching arithmetic we can as well present problems of every-day significance as those which are never met with out of school; in reading we can read that which is worth remembering; in history we can dwell upon some events which are not political; in science we can prepare for farming as well as for college; in manual training and the domestic arts we can do in the small what the race has done in the large in its efforts to provide food, clothing, and shelter, and to perfect means of communication and transportation. If nothing else is gained from the elementary school than a wholesome respect for man's industry, a good basis is afforded for participation in man's occupations.

The serious preparation for practical life begins for the great majority of us at the age of thirteen or fourteen, on leaving the elementary school. The most dangerous period in the life of a boy or girl lies just ahead—say up to the age of nineteen or twenty. This is the time when the average boy must learn to be self-supporting, and when the girl must fit herself for

domestic duties. It is the time, too, when technical training counts for most. I contend that every American boy and girl is entitled to practical help in this time of greatest need—and at public expense, too, if the state maintains high schools, universities, and professional schools for those who aspire to leadership in professional life. My reasons for this contention are these:

1. Anything that will contribute to the greater efficiency of the workman is a contribution not only to his own well-being but to the wealth of the nation.

2. Anything that will lead the workman to take more pride in his work tends to make him a better citizen and a more conservative member of society.

If it be possible to make each man, no matter what his social standing may be, an honest leader in his own field, a workman who is not ashamed of his handiwork, then we need fear no criticism of our colleagues across the sea, nor need we as an industrial people fear the competition in the world's markets. More than that, we need never lose faith in the righteousness of American ideals or dread the consequences of our social democracy. If there be those who say the task is impossible, I answer in the words of General Armstrong, when some one doubted the possibility of negro education, "What are Christians for but to do the impossible?"

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V

PHYSICAL TRAINING IN HIGH SCHOOLS

A noteworthy feature in the educational life of today is the growing importance of the public high school. Not so many years ago much sentiment and some candid opinion was expressed against any charges on the public treasury beyond the demands of the elementary grades. Now the secondary school is accepted as an essential part of the system of state education and is winning in a remarkable degree public confidence and support. On this point statistics of attendance and school buildings are conclusive. In 1890-91 there were 2771 public high schools in the country; ten years later the number had grown to 6318, an increase of over 120 per cent. In 1887 there were in attendance on secondary schools, 35,599 pupils, or .071 per cent. of the population; in 1890-91, 211,596, or .331 per cent., and in 1900-01, 541,730, or .701 per cent. Of the total, 224,584 were boys and 317,147 girls. Thus in ten years there was an increase of 150 per cent. Along with this growth there has been a decrease of the private secondary schools as compared with the increase in population.

Within the last decade the spirit and methods of the high school have undergone radical changes. Emphasis was formerly laid on the preparation for college, and the standing of a school was largely determined by the success of its graduates in meeting the formal tests set by the higher institutions. A large proportion of the teaching force was occupied in giving instruction to the pupils preparing for college. The prescribed requirements were artificial and technical, and designed to aid the college professor rather than to provide adequate and fitting means whereby boys and girls in their teens might best realize themselves and find expression for self-activity.

The high school is now being placed on a broader basis and

is being transformed to serve the pupil and not the college. A spirit of independence is growing among secondary school teachers. In the near future the college may be only too willing to yield to the high school and accept gladly such candidates as are recommended by principals and teachers.

That the high school is finding and filling its own place in the educational scheme is shown by the changes in curriculum, methods of instruction, and general attitude toward the young people who come under its influence. The old-line studies of Latin, Greek, and mathematics no longer maintain their absolute supremacy. There has been a broadening of opportunity. The fitting of boys and girls for the practical duties of life and the training for economic efficiency are recognized functions of the school; attitude of teacher toward pupil is more intelligent and sympathetic, and the criterion of success is no longer that of the drill master. In this tendency toward differentiation and preparation for definite callings there is danger that the school may neglect its real and high mission to train boys and girls into true men and women, and be swayed by the ambition to send out stenographers, bookkeepers, and carpenters. Against such extremes school men must ever be on their guard. A broad, generous, intelligent appreciation of the nature of the pupil and his possibilities is the only adequate basis for the secondary school curriculum and the determining influence on the teacher's attitude and spirit.

As was the case in college, so in the high school, those in authority have been slow, not to say reluctant, to seize the opportunity for shaping the ideals of youth thru the medium of physical exercise and athletic sports. This phase of education applies to girls as well as boys, but the method of approach differs so much in the case of the two sexes that the important and difficult problem of directing the boy's energies along right lines may well be considered by itself.

So manifest are the difficulties and so great are the evils resulting from undirected athletics, so prone is youth to extravagance in exercise that, in many schools and communities and on the part of many headmasters, the attitude is one of hostility. All forms of sport are looked upon as rivals, a

menace to the intellectual life of the school. Many ingenious rules and regulations are framed to restrain, if not to prevent altogether, the expression of youth's natural desire for sports and games.

That grave and serious abuses, injurious to school and individual, are connected with athletic contests, cannot be denied. These evils range from bodily injuries to players, thru indiscretion and over-exertion, to financial looseness and dishonesty on the part of managers and the violation of every principle in a gentleman's code of honor in the overweening desire to win some match game. Public attention is largely focused on the colleges and their abuses, but the same evils obtain in secondary schools, with the danger of more serious results on the character of the pupil and the morals of the school.

The youth in his teens is singularly impressionable. He is prone to hero worship, and his ideal is often embodied in the athlete, the champion in football or baseball, and he lacks the ability to discriminate between the clay and brass and the gold and iron of his idol.

Then there is the constant temptation to excess. This natural weakness of youth is accentuated by the prevalent American tendency to overdo. The spirit of competition is strong. "Anything to win," is the motto. Unless wisely directed, the athletic side of the school claims many victims and takes a place of undue prominence in the thoughts of the pupils.

It must be considered in this connection that the boy carries with him to college the standards of moderation in play and of due proportion in allotment of time between study and recreation that he formed in the high school, so that proper regulation of the athletic interests of the lower school cannot but have a wholesome effect on the spirit and temper of the higher.

Another unfortunate condition is when sports and games fall into the hands of a few students, who arrogate to themselves undue prominence and practically debar the great mass of students from participation. No such general contests are known as the football match wherein Tom Brown was introduced to Rugby life.

With a frank admission of all these possible or actual evils connected with the various forms of athletic sports, and with full recognition of the need of control and restraint, still the attitude and policy of the average high school is hardly commendable.

For, as has been said above, the desire, the instinct to use his physical powers in plays, games, and all forms of competitive sport is inherent in every true boy, and its expression is essential to his fullest development, not only in bodily power, but in keenness of mind and strength of character.

Such a means of education should be utilized, and the wise schoolmaster is he who enters sympathetically and intelligently into the domain of the boy's interests and secures by and from them the largest educational values and results. It is a hopeful sign of the times that the conservatism of school men is giving way before the flood tide of new conceptions and knowledge concerning the child and youth. The routine of the school and traditions of culture from the printed page are no longer given an unreal and exaggerated importance. Teachers are learning to use the innate powers of the young and to work in many ways along the line of least resistance. The old figure of the marble under the chisel no longer stands as the typical illustration of the educational process. Even the parallel of the bending of the twig has been overworked.

Any consideration of the place of physical training in education naturally divides into two parts: the formal gymnastics and the wider field of sports and games. In the gymnasium the object of the exercises is the formation of correct habits of posture, breathing, walking, and the proper control of the great fundamental muscles of the trunk and limbs, with a view to securing a vigorous tone in the vital organs and in the centers of nervous energy. Weakness or defects revealed by physical examination may in many instances be remedied by carefully prescribed corrective exercises. Experience shows that oftentimes such ailments are unknown to the boy himself.

The drill on the floor gives the instructor an opportunity to meet every member of the school and to impress on him the importance of regular habits and system in the care of the body.

With the gymnasium work may be combined short talks at stated intervals on personal hygiene. The interest of the pupil may be secured and active attention to his proper physical development obtained by furnishing him with a tabulated statement of the more important measurements as taken each year. A normal boy is alert to his growth in weight, height, chest capacity, and strength, and the ambition to excel in these measurements acts as a powerful motive in leading him to correct habits of living.

Gymnasium work should not be made too formal or complex. Drill with dumb-bells, wands, or Indian clubs, and simple arm, trunk, and leg movements, with some marching, are sufficient. Insistence on the niceties of exercise detracts from the value of the gymnasium. The aim is to secure vigor rather than to impart finished grace of action. After the drill it is well to let the entire class take part in free play, such as basket-ball, battle-ball, or others of the numerous floor games now at the command of the physical instructor. Much freedom and only a moderate adherence to the rules of the game are to be required. Nor should too keen a rivalry be encouraged, and, with this end in view, frequent changes should be made in the personnel of the opposing groups, or rather the two parties should be made up at each session, so that no settled antagonism may develop.

But with all the freedom, the instructor must insist on a certain amount of formal obedience. Each member of the class must report promptly and follow directions without hesitation. A simple uniform helps to give distinction and character to the gymnasium drill. The time devoted to the exercise must be left to the judgment of each headmaster. Two periods a week of from forty-five to fifty minutes each may be regarded as desirable for the members of the lower classes. The gymnasium may be regarded as an elective for seniors. It is well to consider physical exercise as a fixed requirement of the school for promotion and graduation.

With a carefully regulated course of gymnasium instruction, the school possesses a mainstay and central core, about which the athletic interests will gather, and for this reason the greatest

attention and care should be spent in keeping it strong and sound and of such a nature as to gain the support and hold the interest of pupils. They should be led to see that attention to this phase of school work is the best means of keeping the general athletic life healthy and vigorous. Few boys can resist such an appeal, for their loyalty to games is instinctive and strong.

Such an interest in athletic contests shows by its very intensity that it is deeply rooted in the soul of youth. Scientific research has in recent years worked out many important generalizations regarding the play spirit.

Competitive games, such as are the especial delight of the adolescent, and particularly team contests, have a certain connection with tribal warfare, and in them the boy rehearses the experience of remote ancestors in actual battle and finds expression therein for the virtues, or splendid vices, as St. Augustine calls them, inwrought by generations of these struggles. It is certain that in this tutelage of warfare there were developed traits of character most vital to the success of the individual and to the promotion of community spirit and effective united action for the common weal. The good results of games and sports are by no means limited to the betterment of physique. They do constitute an important means for bringing to highest efficiency the great fundamental muscles of the body and giving high quality to the vital organs and soundness to the vital processes. But, more than this, well-regulated athletic contests promote mental qualities of no mean value, quickness of perception, keen discrimination, and the power to reach conclusions from facts observed. Moral traits, such as self-restraint, endurance, courage, decision, and the ability to rise superior to defeat find abundant room for exercise and development. The saying of the Duke of Wellington that the Battle of Waterloo was won on the playing fields of Eton has a deeper meaning than appears at first thought.

Then, too, it must be acknowledged that the training and discipline of the classroom are, in large measure, aloof from the actual, every-day life of the world. A too scholastic type of mind may indeed unfit its possessor for the conditions he must

face in business or professional life. The proverb, " Knowledge is power," has been a pitfall for the youth who hopes by encyclopedic attainments to win success. With the possession of the treasures of literature, art, and science there must be joined ability to act with decision, courage, and vigor, and with definite end in view. Not only may the scholastic habit be a disadvantage in the struggle for a living, but the conditions for book study and the requirements of the average school are not such as appeal to the nature of many boys.

To this reason may be due the fact that so large a percentage of boys fail to graduate from the high school. The tendency to leave begins before the secondary school age. In 1900-01 41.46 per cent. of the membership was composed of boys and 58.54 per cent. of girls. Stratton D. Brooks of Boston, in a recent study of causes of withdrawal, shows that 48 per cent. of the cases of boys leaving school is due to the desire to go to work or for activity, or to indifference. These influences begin to show great strength at the age of fourteen and continue thru the high school period. Mr. Brooks concludes:

" Desire for activity is perhaps not the best term to use here, for from his babyhood the boy has been at all times as active as possible. There is no sudden awakening from a state of lethargy to one of vigorous action. It is rather a change of ideals on the part of the boy, rising, no doubt, as part of the adolescent readjustment. His activity now tends to pass over from the play to work attitude. He wants to do things of real worth, to have a real motive, and to see a real result. His head is full of ideas, not book ideas, but world ideas, life ideas. His body is full of energy—not well directed, it is true—but yet energy and latent possibilities for productive work, and the boy unconsciously, perhaps, but none the less powerfully, is driven to express his ideas in action. The school, to be sure, offers him the chance to express ideas in language, but it thrusts on him the particular ideas it wants expressed and then stops him at every turn to mark the vowels, or give the syllables, or correct the grammar, until the idea and all pleasure in it are forever lost."

Such conditions indicate not only the need of a readjustment

of the curriculum to meet the needs of youth, but also that every advantage should be taken of such phases of school life as afford opportunity for expression of the boy's normal activity. One of the best of such agencies is well-directed athletic sport.

The foundation for a vigorous, effective, well-balanced manhood is a body whose parts and functions are so organized and developed as to do most perfectly the will of its owner when directed to worthy ends. In outdoor contests, with the zest of friendly rivalry, such physical qualities are best acquired. Scientific formal gymnastics do not possess like interest. The very absence of self-consciousness, the abandon of the player, is a valuable hygienic quality. Not only are the vital organs acting under most favorable conditions, but they are properly coördinated. There is a free play of the nervous system and an accumulation of energy and resources in the great ganglia, the storage batteries of the system, that give the power to work and accomplish results with least friction and waste.

Especial benefit is gained from such exercises by the sympathetic nerve centers, on whose soundness depend poise, sanity, and well-balanced views of life and its experiences, that common sense to which the maker of proverbs doubtless refers when he speaks of "Wisdom as more precious than rubies."

In considering the discipline given on the playing field, it must be noted that these experiences are intensely real to the boy. Because of this reality the impressions made on mind and character are deep and abiding. Moreover, impression and expression, instruction and self-activity are organically united in play, and such a twofold process is the highest aim of educational method and philosophy. In the field of manly sports there is found the training that makes for quick and accurate observation, alert attention, application, and the executive power to make the most of opportunities. Is there any teacher who would not rejoice if the same alert, intense mentality were applied to algebra or Latin as the batter bestows on the ball as it comes toward the home-plate, or the full-back exercises on the opposing players as he plunges toward the enemy's goal?

And the training in moral qualities is no less valuable. Many a youth learns in most practical fashion that self-control, temperance in food, drink, and bodily exertion, courage, and obedience are indeed cardinal virtues. A member of a team must be ready to sacifice himself without question when occasion arises. More than that, he must be self-forgetful. The schoolboy who, in act, word, or thought, is disloyal to the nine or eleven soon feels, and in no uncertain fashion, the condemnation of his fellows. Loyalty to the school easily becomes the first rule in the youth's code of honor. Here is the germ of the splendid devotion to country, truth, and freedom that has given the world its witnesses and martyrs for the cause of mankind in all ages and on countless fields of strife. Under the stimulus and inspiration of this loyalty many a lad conquers the habit that makes him unfit for diamond, gridiron, or rowing course. There are schools where the physical instructor has been able to raise the moral tone of the entire student body by means of the ideals and standards developed on the playground. Grosser vices have been checked and driven out. When a boy once realizes that a certain habit weakens him physically and keeps him from competing with his mates on equal terms, he is given a powerful incentive to mend his ways.

But possibilities for good are counterbalanced, as always, by the danger of abuse. The proper conduct of athletics is one of the most difficult and urgent problems that confront the school man of today. Many of the evils attendant on interscholastic contests are notorious, but some of the gravest abuses are not of such a nature as to engage public attention. The doings of the schoolboy do not occupy so large a place in the columns of the press as those of the college or professional athlete. Yet influences for good or evil in the secondary school age are most potent in their effect on the physical, mental, and moral being of the youth.

In dealing rightly with this problem, the attitude and personality of the principal in the smaller schools, and of the physical director in the larger institutions are elements of the highest importance. Here is service that calls for a genuine, sincere, whole-souled man, one who understands and sympa-

thizes with boys, who knows their needs and their besetting sins, their worthy ambitions and aspirations. With such qualities of mind and heart he is sure to win the esteem, respect, and loyalty of his charges; he will have their confidence, and to him they will go in perplexity and trouble. Graduates of Amherst College can testify to the place filled in that institution by Dr. Edward Hitchcock and to his power and influence in shaping lives for good. Such an opportunity is open in full measure to the secondary school instructor. He approaches the youth on his plane of greatest interest and may work along the line of least resistance.

In technical qualifications the physical director should be a good gymnast, an athlete of sufficient ability to hold his own in ordinary contests; with these should be joined a thoro knowledge of physiology, anatomy, and hygiene, and of the elements of medicine. He must be posted on the rules and regulations governing school games. Ability to coach, while not essential, is desirable. A competent physical director may well be intrusted with the general conduct of school athletics and given the responsibility for enforcing such standards as the authorities see fit to impose. Drastic discipline should be left to the principal. Restraint and control are called for in many ways. The impetuous youth, with the lack of caution so characteristic of the adolescent period, runs great danger of injuring himself by excessive sport or by participation in games of too severe a nature. In such cases the duty of the instructor is clear. Such pupils must be debarred from all games involving over-exertion. To enter a contest for which one has not adequately prepared by training, and for which one is not physically fit, is to defeat the very end and purpose of athletics. When the desire to excel in some sport becomes a distracting influence and leads to neglect of studies, there should be sharp restriction and even suspension from the team until the standing in the classroom improves. As physical well-being and intellectual growth are more important than any game, so the player who uses dishonest methods, who evades regulations, who sacrifices the best interests of the team to his desire to "star" is a fit subject for the severest discipline. No confusion of

moral standards should be permitted in the mind of plastic boyhood.

A strong and vigorous sentiment in the school is the best guarantee of right motives and methods in the different teams, for organized school spirit is a power against which no pupil can well stand. In American high schools and academies the building up of traditions, usage, and precedent has not yet been undertaken in any serious way. In this respect the great English public schools, Eton, Harrow, Winchester, Rugby, may teach valuable lessons. One finds there a more general participation in sports and an absence of the feverish, inordinate eagerness to win that is itself the source of so many evils in American school contests. To build up a body of customs adapted to our peculiar needs is one great opportunity that the present situation offers to the instructor of youth.

Certain general principles may be posited as guides in such an undertaking. School sports should be so organized that every pupil may be required to take up some form of exercise and to do his share in some competitive game. Many forms of such contests should be offered. The boy who does not like football, who, perhaps, should not play it, may find his opportunity in baseball, cricket, tennis, rowing, or fencing. Large squads for practice should be brought out and given careful training before the team is chosen. Games between classes and divisions of the school make for this general interest and participation. So strong is sentiment and so well established is this principle at Eton that the boy who does not enter either cricket or rowing is looked on with disfavor and suspicion. In this connection it should be noted that the condition most likely to breed abuses is one where a small group of boys control the athletics of a school. Such a coterie, when they see that the success, or even continuance, of a team depends on them alone and that there are no competitors for their places, often become overbearing, insubordinate, and disposed to conduct athletics in a semi-professional spirit. But when there are many candidates for each position and the members of the team and the pupils know that places are held only on good

behavior, the tone of athletics is easily kept pure and its standards high.

With such large squads of players it is comparatively easy for teachers to insist on good scholarship and gentlemanly conduct from all who represent the school on its team. The technical rules may well be left to the judgment of the principal and his associates, but they should be severe enough to debar from interscholastic contests any one who is not giving evidence of faithful and earnest work in the recitation room. Conversely, the desire to win a place on the school team often acts as a spur on the laggard in his studies and holds him to his work. Any one guilty of misconduct that reflects discredit on the institution to which he belongs should be considered as thereby forfeiting his right to represent it. By wise and judicious enforcement of such rules for the individual players, principal and physical instructor may coöperate so as to make athletics respectable and a power for good. In the various class contests and affairs within the school no barriers should be raised against participation, but a general interest promoted.

Definite regulations and control may well be exercised in limiting the number of interscholastic contests. The American tendency to overdo is shown in the schedule of games. Far too many events are held. Such contests, especially when there is sharp rivalry, give rise to excitement that has an unsettling effect on the school at large. The players are subjected to an undesirable strain from too many games and the training required. In English schools attention is centered on a few matches of importance, as those between Eton, Harrow, and Winchester cricket. In thickly settled parts of the country, as Boston and vicinity, New York and Chicago, and other great city centers where there are many high schools in close proximity, the use of sharp restraint is especially marked. Concerted action on the part of headmasters and the formation of leagues, each of a few schools and with schedules of moderate length, will easily bring to pass this needed reform. It is extremely doubtful if any one school or master can make headway against the tendency to excess. Combined action,

besides being more effective, has a much wider influence than any isolated example of virtue, no matter how shining.

It should be a settled policy of those in control to abate the severity and intensity of the contests. Training should be a recreation and not a burden. Secondary schools are in danger of aping the colleges in their athletics, with the result that, in the desire to win, the element of pleasurable sport is lost. It should be constantly impressed on the young athlete that gentlemanly conduct, fair play, and a genuine enjoyment of the game are of more importance than carrying the ball across the goal line. Above all else, let the school beware of the leaven of professionalism.

Success may best be secured when the members of the school are recognized as partners in the conduct of affairs. It is the part of tact and wisdom to leave as much as possible to the boys' own initiative and discretion. They should understand that the authorities are ready to keep company with them in all ways that promote the best interests of the school, but that if they turn aside to dangerous paths they will not be followed. With privilege goes responsibility, and boys as a rule appreciate such appeals and confidences. Sometimes it is well to let trial be made of some doubtful project. The resulting failure or embarrassment teaches a lesson more emphatic than any precept.

In all management, whether of schedule, finances, or conduct of games for the convenience and comfort of players and spectators the school should realize that its credit, standing, and best success depend on a strict adherence to business methods. Especially in the handling of funds and the arrangements for the field at important matches is there need of firm control and watchful supervision.

But, details aside, it would appear that this subject possesses great possibilities and that a serious duty rests on those charged with the education of American youth, to rightly use the athletic instinct, the healthy desire of the boy to excel in many sports, so as to train up in the public schools a strong, fine type of manhood blessed with a vigorous physique, an alert mind, and a sturdy character to do and endure.

The demand for proper playgrounds in our great cities, for athletic fields and gymnasiums, should be constantly urged on the people. Adequate supervision by competent instructors should be provided in each school, and field sports and contests so directed and organized as to bring out the best results in character. Eminent social qualities, readiness for service, united action for the common good, self-sacrifice in the cause of school, city, country, humanity, all these virtues may find expression and room for growth on the playground.

If such ideals can be set before the boys of the country thru the example and precept of teachers and thru the lessons of the classroom; if the youth practice these virtues, test them, and make them their own in their mimic, but real, struggles, then it may be said, after the nation has passed thru some fiery trial, that the playing fields of the public schools have done their share in winning the decisive battle of the republic.

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VI

THE SEVEN FACTORS OF EDUCATION

"Produce! Produce!" exclaims Teufelsdröch in *Sartor resartus*. "Were it but the pitifullest infinitesimal fraction of a product, produce it, in God's name! 'Tis the utmost thou hast in thee: out with it, then."

I

THE CONDITIONS

Many years ago I was profoundly impressed in reading for the first time Ruskin's *Seven lamps of architecture*, as setting forth the universal illuminants of architecture, the architecture of all time and of every people.

Am I too venturesome to enter an arena so warmly contested as that of modern teaching and endeavor to determine whether there are also universal illuminants which lighten the way to the perfect training of the mind? Is there in education, as in architecture, an absolute code derived from the intellectual experience of generations of thinkers, a code for every subject, for all time, and for every people? Or is the general revolt from authority, which is the most conspicuous tendency of our times, to leave education also without the sanction of experience?

I was drawn to these questions: first, by consciousness of somewhat cloudy thought in the matter, consoled only by signs of similar cloudiness in others; second, by rising indignation against the apparent infection of education in this country with certain material and experimental tendencies, as if from the contamination of a triumphantly successful commercial age.

My inquiry has not resulted in the discovery of new laws. Separately, the illuminants of education are as near and familiar parts of our intellectual inheritance as collectively they

are far from lighting the long and often obscure paths of the average teacher. Few perceive with the clear vision of post-humous critics and biographers that the over-cultivation of one or more of the factors distinguishes the well-balanced from the ill-balanced mind, the efficient from the inefficient student. From the broad standpoint of symmetry, many very learned men, as well as many great observers, are alike imperfectly educated, and for this their guides and masters, in part at least, may be held responsible. One work I have studied, by a man of high authority, omits all reference to what I regard as the supreme factor of education.

My inquisitive route is one of observation, rather than of theory; it follows the lives of men, rather than the ways of the books. Consider Huxley, altho not the most creative thinker, as the best pattern of the educated Englishman of the last century, and, carefully observing the gradual attainment of his perfect discipline, we find it arose less thru his teachers than thru his own discernment of the collective and cumulative value of several educational factors and his deliberate purpose to experience them all, so far as lay in his power. Pasteur, guided by a similar instinct, actually resisted the advice of some of his professors. Similarly, we observe the superb education of Darwin and of Spencer as chiefly a self-schooling growing out of the consciousness of certain intellectual wants, such mental appetite, and the determination to satisfy it, being one of the symptoms of greatness.

From such biographies, from the actual methods of the great teachers, it appears that there are universal illuminants, that there is an absolute code by which to develop the infinitesimal, as well as the almost infinite, powers of the human mind.

The material and experimental spirit in America

In contemporary American life there are two currents which are setting away from, rather than toward a clearer perception of the "universal" in education—these are our materialism and our experimentalism. Much of the material spirit undeniably pervades our college halls and mars the otherwise splendid

progress of educational idealism in this country; computors are heralding great gifts and statistical increases in which numbers are swelled by summer schools, by dental, veterinary, and miscellaneous departments, as if to maintain prestige on a distinctively quantitative, rather than on a qualitative, basis.

Experimentalism is partly an intruder from our material atmosphere, partly an offspring of the general revolt from authority.

It is a truism of trade that our manufacturers owe a large measure of their supremacy to their readiness to abandon old machinery and substitute new. It is as much an American instinct to welcome change as it is an English instinct to shrink from it. Was not the manufacturers' spirit more or less pervasive in the Boston meeting of the National Educational Association of 1903,[1] when the prolonged debate was summarized, with some irony and much truth, in the statement that from electives and courses we are to pass to experiments with curriculums as a whole, and with the period of studies on a grand scale; in other words, that the colleges shall compete in the cultivation of brains after different fashions, just as rival furnaces are competing and experimenting in the production of steel; that we are to witness the survival of the fittest institution, which shall turn out the largest quantity of the best product in the shortest possible time, and thus most thoroly exemplify the spirit of American trade.

Confused by the tremendous inrush of new knowledge, we have already been experimenting for some years past. Perhaps our impulse for facile modification and adaptation is nowhere more conspicuous than in the rapid movements of these decades, prompted by the fallacy of regarding change as identical with progress, and ignoring the fundamental evolutionary law that change is as often retrogressive as progressive. It is quite possible, not to say probable, that many of the sweeping alterations which have taken place, and are now contem-

[1] "The length of the college course and its relation to the professional schools." Papers read before the Department of Higher Education of the National Educational Association at Boston, Mass., July 7, 1903, EDUCATIONAL REVIEW, New York, September, 1903

plated, are distinct retrogressions, and will remove us farther and farther from solid intellectual advance; that they conform to the commercial spirit, rather than transform it; that some of our ablest educators have been unwittingly contributing to a backward movement by failing to grasp clearly in their own minds, or to set clearly before the nation, the slow and difficult steps which are necessary to teach men how to think and how to produce.

Consider the case of the college. It is generally, but not altogether, fairly alleged that it is a patient, that it is a sick organism, even that it has reached a condition which may be regarded as useless. Remedies are being administered, not from any very clear system of educational therapeutics, but on the rule that when one tonic fails another shall be given trial. A cupping process or drawing blood is suggested; one presidential doctor prescribes four years of life, another allows three years, another two; another proposes to cut short life altogether, predicting the extinction of the college and the direct passage from the high school to the university.

Extinction is the *reductio ad absurdum*. Such an end to experimentalism would be a national calamity, because schools can never equal colleges, either in resources or in fitting for citizenship; because the longer period of the education of the larger number would fall into the hands of women teachers, who are constantly multiplying in the public schools; because the democratic social spirit, so vital to the college, is fatal to the university, the future triumph of which depends chiefly upon the enforcement of the idea that here belong exclusively the young intellectual aristocracy of the country.

Even abbreviation may be another instance of failure to distinguish between progressive and retrogressive evolution. If a year be cut from the college to adjust the year which has been added to the school by belated entrance or advancing standards of admission, the net result is to substitute a year or two of school life for a year of college life. Is this a progressive change? Is not a college year rich in historical associations, teaching capacity, libraries, laboratories, museums, and all the other products of generous endowment of more value than a

school year? Similarly, if learning or the acquisition of general knowledge remains in fashion even by apology as a specific function of the college, does not the prodigious intellectual advance of the nineteenth century tend to lengthen, rather than shorten, the college course of the twentieth century? If the college period is to be changed, would not a consistent movement be the opposite of an abbreviation? Would it not be for the more effective school, the earlier admission to college? I do not pretend to settle [2] this very difficult question, but only to put it in the light of an evolution problem.

The friends of the patient advance the traditional plea that the college is to be preserved as the home of "liberal culture" —a laudable reason for prolonged life, which, however, contains an element of indefiniteness. Here we approach a more rational diagnosis of the disorder, which, in itself, suggests a remedy. Liberal culture, for what end or purpose, one may ask? Is not this lack of purpose, this dysteleology, to borrow an Haeckelism, the internal disorder which has bred the pathological condition of the college during the very years when the university and the technical school have flourished like green bay trees?

Refreshing definiteness of purpose in training for material production is the invigorating principle of the technical schools which show no signs of internal disorder or degeneration, and as to the utility of which there is no question. No one proposes to cut their periods from four years to three, or to two, or to

[2] My personal opinion may, however, be stated that economy and careful adjustment of time should begin in the school years where the vista of life seems so long that the value of time is not appreciated; that early waste of time should not be compensated for by the abbreviation of the real preliminary culture period of college life. If we are to experiment, therefore, *let us try the experiment of thoroness of education.* If one student is so clever as to acquire in two or three years what another does in four, let him profit by making his work broader and more intense. We shall at least be on the side of the method which has led to the best creative work in all time. If the American college disappears in the struggle for existence between the high school, the technical scientific school, and the university, it will not be because it deserves to disappear, but because the men at the helm of college education have no clear conception of what they are aiming to accomplish and are trying fortuitous experiments in quantitative matters of subjects, hours, days, and months, instead of reforming the quality and standard of the work accomplished.

eliminate these schools altogether; they have their weaknesses, but no one charges them with dysteleology. Similarly, production in the form of original research is the definite ideal of the American universities. This ideal was first embodied among us in the early years of the Johns Hopkins University, when, with an assemblage of gifted teachers, and with the flower of American students, the average results thruout all the departments were commensurate with the best attained anywhere, and at once spread thruout the world the new and momentous fact that America could establish and maintain a university. Such an ideal is, however, not maintained, chiefly because the American university at present rests upon the insecure foundation sands of superficial college work.

It was my privilege recently, in one of the most imposing of academic processions, to walk beside a profound student of international law. I could not help feeling the lack of proportion between the form and the substance, the flowery display of hoods and gowns, and the productive scholarship actually represented. "How can we live up to these brilliant colors?" I observed to my companion. "How can we be as learned as we appear?" Raising his hand above his head, he jokingly replied, "By putting the dollars up there, by making the teaching profession more of an object." This partly jesting and partly truthful answer did not include all the reasons why American intellectual production has not reached the general grade of that of the old world, and if I have spoken of the college, of the school, of the university as separate, I have misled—there can be no discontinuity.

A serious answer to this jesting question would be that we shall be as learned as we appear in America when, not only in university, but in school and college, we reach a perfectly clear understanding of and unite our energies in the chief object of education, namely: the *inculcation of those factors which, according to the several abilities and predispositions of men, culminate in the several forms of productive activity.*

Production is conceived, with Carlyle, as a man's output, as the utmost he has in him, his resourcefulness, his centrifugal, rather than centripetal life; in its highest form his creative

power. If training for production vitalizes the technical schools, if it is the ideal of our universities, is it not evident that such training, in the broader sense, is the restorative principle of the American college; that the collegiate antidote is not to be found in further experimentation, in lengthening or shortening periods, in eliminating Greek or mathematics, or any other difficult subjects, in a rigid required system, or in a universal elective system, nor even in inducing men to think and study by means of a preceptoral system, admirable as it may prove to be; but that the elusive remedy is rather to be sought in the application of a basal or universal working theory of education?

In such a theory, we are first to substitute the newer centrifugal ideal of production for the older centripetal ideal of liberal culture. Liberal culture, that indefinable quality imparted by learning multiplied by the sense of beauty, is to be the stepping stone; it is to be the obligato or running accompaniment, rather than the solo; it is to be the stage, rather than the summation. Second, we are to ascertain in what sense, in what measure, and by what means the college may range itself with the polytechnicum and the university as a school for training producers. Such training is a very serious undertaking; if there is any field of human activity in which it is light or easy, I do not know of it, but rather contend from the precept and example of my chief masters, McCosh, Huxley, and Balfour, and from the much more exacting master, experience, that the road from nothing to culture, and from culture to the point where man produces anything of the least value, is an extremely long and hard one.

I contend that some of our leading educators in the Boston convention of 1903 were hastening the tide of American haste and superficiality, instead of sternly telling that great assemblage of teachers of the nation some unpalatable truths as to our still subordinate position among the thinking producers of the world.

If we are to direct education thruout into the original, the creative, rather than into the receptive, the absorbent, the critical temper of mediævalism, I do not know how we can more clearly introduce its relation to our school and college life

and to the further elevation of our university life than by a series of contrasts, which will lead the way back to the main question: as to *what are the factors of education, which culminate in production?*

Modern mediævalism and true modernism [3]

"The mediæval university," observed one of the greatest teachers of the last century, "looked backwards; it professed to be a storehouse of old knowledge, and except in the way of dialectic cobweb-spinning, its professors had nothing to do with novelties. Of the historical and physical (natural) sciences, of criticism and laboratory practice it knew nothing. Oral teaching was of supreme importance on account of the cost and rarity of manuscripts. The modern university looks forward, and is a factory of new knowledge; its professors have to be at the top of the wave of progress. Research and criticism must be in the breath of their nostrils; laboratory work the main business of the scientific student; books his main helpers. . . The cardinal fact in the university question appears to me to be this: That the student to whose wants the mediæval university was adjusted looked to the past and sought book learning, while the modern looks to the future and seeks the knowledge of things."—HUXLEY.

What is mediævalism? Is it not surviving in the methods proposed and continued in some of the most modern professional systems? I am inclined to answer the second question in the affirmative.

We should not, for a moment, fall into the almost universal error of confusing mediævalism in education with classicism, an error which has been widely disseminated by such brilliant and effective essays as Adams's *A college fetish.*

Greece and Rome illustrate the distinction. The relatively non-productive Romans were partially mediæval. Rome, economically, and, in a large measure, intellectually and artistically a parasitic or centripetal state, was supported by phenomenal military genius and genuine centrifugal or constructive powers in law and government. Not so with highly centrifugal Greece. Greek supremacy was no accident: it was due to great educational conceptions applied to a people purified by race culture and selection.

[3] The main ideas of the present article were worked out and privately printed in 1902 under the title "The mediæval and the true modern spirit of education."

In education, Socrates, Plato, Aristotle were eminently men of their period, or moderns, as we learn from their frequently reiterated views. It will be recalled that the Socratic solution of the educational problem was that the new state of society was to be based on knowledge, that the germs of knowledge were inherent in every human being, by virtue of his own experience, and that these germs could be developed by the dialectic process. The whole bent of Socrates as a teacher was the cultivation of originality. His rule that, to educate a youth, the less we think for him and the more he thinks for himself, the better, is the root of the true modern spirit, because it is the first step toward production. Louis Agassiz professedly adopted the Socratic method in teaching zoölogy, and Huxley's method was largely Socratic. Plato observed: "We next come to arithmetic, geometry, and astronomy . . . all citizens shall learn the rudiments of these sciences, not because of the necessities of practical life [a word for our most practical schools], but because these are endowments belonging to the divine nature. *By a good method, the teaching of these sciences may be made attractive and interesting, so that no force may be required to compel youth to learn.*" Inspiration, sequence in the development of body, mind, and soul were Plato's modes of training the young citizen, while his curriculum was surprisingly similar to that of our older colleges.

Unfortunately, there is preserved only a fragment of Aristotle's writings on the art of teaching, our knowledge of his opinions on the development of the mind being largely inferential from his works and from his intellectual ideals. If these great Greeks had recommended the youth of their country to devote ten of the formative years of their lives, first, to the Mycenæan language and culture, and, second, to the Egyptian and Mesopotamian languages and cultures, then the few who still maintain that our modern youth should largely devote the formative period of their minds to ancient languages might rightfully claim to be classicists.

If there is such classical authority for the anticlassical movement, it does not follow that the elimination of the substance has eliminated the spirit of mediævalism from among the anti-

classicists. The true classicist may be one who follows most closely the highest classical models, and these were certainly the models of the Greeks, both in their methods and in their achievements. The Greeks will be modern for all time, and are still to be studied for the truest modern ideals, for ideals which resulted in the most remarkable achievements in the way of centrifugal life that the world has known, considering always the period and the infantile state of knowledge. While anticipating us in the sciences, in the extraordinary development of mathematics, in the discovery of the evolution theory, they gave ethics, philosophy, literature, and science their foundation stones. The destruction of the Greek intellectual movement by political, moral, and social decay, and by the loss of numerical and military supremacy, set the intellectual progress of the world back two thousand years.

With the centrifugal Greek spirit, contrast the centripetalism of the old educators in their renaissance of classical learning, impelled partly by the extraordinary intrinsic or inherent force in such fragments of this learning as remained; consider their sedentary life, absorbed in poring over and discussing what Aristotle and Pliny had to say about the world, rather than in travel and exploration of their own; contrast their scrutiny of the books of the ancients, rather than the book of Nature herself; their compilations in natural history with their dearth of observation of the objects about them, of the birds, the fishes, flowers, and even of human society.

This very over-valuation of classical literature and science inevitably brought the reaction of the great "observing century" which has just passed; a reaction partly ending in a false modernism, however, which may have exceeded the limits prescribed by the truest modern spirit. While we may abandon the claims for the classics of "superior mind-training value," or of "best conducing to a pure English style," we may adhere to them as our most highly perfected disciplinary studies, as developing systematic thinking, as familiarizing us with the marvelous classic spirit, as giving us a sense of perspective and proportion for our own lives and times, as fundamentally associated with the technical language of biology and other sciences,

with all discoveries or centrifugal work in classical history, art, archæology, and philosophy. The question is not as to the value of the classics, but as to the part they shall play in the educational period. Old Montaigne's epigram even to-day most truly expresses the real essence of the classical question: "No doubt both Greek and Latin are very great ornaments and of very great use, but we buy them too dear."

There is also the reaction to the "modern subject." In the artillery fire against Latin and Greek, in the smoke and confusion about elective and required courses, the impression is abroad that the modern subject constitutes the essence of modernism as opposed to mediævalism. This is a dangerous half-truth, for, considering the diversity of subjects upon which the minds of great men have been bred down the ages, is it not apparent that the essence of the matter must lie less in the subject than in the intellectual objective of the teacher and of the student? Do we not often observe the modern languages taught in a most intensely mediæval fashion, and the ancient languages under a different type of teacher as sources of a most modern spirit? May not the classics be taught in such a way as to rapidly develop all the forces of education, altho such forces may be still more rapidly and readily developed thru the sciences? It is not a matter of fancy, but of fact, that, despite clear perception of its special objective value, the very teaching of science itself is still largely after the mediæval, dogmatic fashion; and that even the "verification of anatomical fact" method of Huxley has its dangers.

Asymmetry and superficiality are the two words which sum up my criticism of our present American education from bottom to top. Swinging like a pendulum, it has lost some of the merits of mediævalism, without attaining the full advantages of modernism.

Accepting the general truth of Huxley's brilliant, if somewhat extreme, contrast between the mediæval and the modern spirit, as quoted above, we see that professed modernism in education still contains a large admixture of mediævalism in its failure to develop the centrifugal forces of the mind. Such development was the essence of the Greek spirit in education,

yet the modern spirit emphasizes even more than the Greek the relation to the fellowman, not merely in the political, but in every aspect. In fact, the essence of this spirit is service; in matters of the mind, it is intellectual altruism; in education, it is the training of the productive mind.

II

THE ART OF THE TEACHER

What are the forces which are essential to the productive mind, and what educational theory is most apt to develop them?

So far as intellectual progress is concerned, and I am not now discussing religious, moral, or physical progress, the first and most fundamental of these forces are in the nature of canons, or standards; they lie in the distinction of truth from error, in the appreciation of beauty and fitness, and in the application of these standards to thought. Together with our standards come our sources of knowledge, and there arises, as the first, that of learning from the stores of tradition, from books, and the experience of man in our own and previous generations; there follows close, as the distinctively nineteenth-century source of knowledge, that of direct observation of men and of nature. Then, for the testing of our knowledge, there is applied the triumphant crucible of human reason. Then our standards, our knowledge, and our reason seek expression in spoken and written language. Finally, as the supreme human, most closely approaching the superhuman power, the six preceding forces lead to the production of new ideas and to all the forms of original activity. This is the epitome at once of the "universal," both in intellect and in education.

Truth, beauty, learning, observation, reason, expression, and production, in their most comprehensive forms, are the seven forces of progress, and the *factors of education* are the processes of storage of these forces by coöperation of teacher and student, the former with his constantly diminishing, the latter with his constantly increasing responsibility. The batteries become ready to discharge, the potential intellectual energies

ready to be liberated; and the cunning business or art of the teacher consists in patience and alertness in ways, means, and methods, in repairing or supplying deficiencies, and discovering powers which are never actually to be idle. As Eduard Suess, the distinguished Austrian geologist, recently observed in his farewell lecture: "And now I have reached the comma. When I became a teacher, I did not cease to be a student; and now that I cease to be a teacher, I shall not cease to be a student, as long as my eyes see, my ears hear, and my hands can grasp. With this wish, I do not step out, but take up my former position."

Looking for a moment to our social obligations, it would appear possible to cultivate the first five of these forces in a monastic existence totally without benefit to one's fellowmen; to acquire "liberal culture" without effect or result, except for its possessor; to attain an individual mastery of truth and beauty, of learning, of observation, and of reasoning as purely receptive or centripetal powers. In contrast, the last two forces of expression and production are the centrifugal applications of knowledge, by their very terms altruistic and marking the purpose of education, the service of our fellows in commerce, in art, in politics, in literature, in scientific discovery, in every form of human activity.

To learn to produce, to be of service, we must, with Huxley, discern to the full the special rôle of each factor and, at the same time, secure a balance. The balanced enforcement of the heptalogue is as essential to the perfectly educated man as the balanced working of the great system of organs is to the ideal bodily development.

The attainment of symmetry will always baffle us, because of the generally inborn or constitutional asymmetry of mind; because of the limitations and predispositions of pupils and students, one having the gift for truth, another for beauty, another for learning, another for observation, another for reason, another for expression, another for creative production, and the many having no special gifts whatsoever. Only rarely are the largest number of these gifts in the largest measure combined in what we call the youth of genius, and only that

educator will rightly serve his calling who holds in his charitable heart this law of the mental variability of the race, who suspects the existence of talents out of the direct line of his own sympathies, who hopefully foresees that the dunce in mathematics may become the brilliant biologist, that the defective memory may be housed in the same brain with the keen reasoning power, that the deficient linguist may metamorphose into the brilliant observer, that the listless youth of eighteen may exhibit the spirit of the daring explorer at thirty, that the Rowland who leaves the small New England college in disgust may become the leading American physicist, that the Darwin who loiters thru Cambridge may revolutionize the thought of the world. Even my own experience with students yields instances of an inborn predilection for a certain subject working a marvelous metempsychosis. A careless student, in the search for an elective involving the irreducible minimum of effort, perhaps by the toss of a coin, elects a subject which, because of an atavistic, tho previously unsuspected, impulse, fascinates and transforms him for life. Herein lies often the failure of the more rigid and restricted curriculum, and the success of the miscellaneous fire of many electives or aimless discontinuity of studies, that among the repeated shots one may hit the bull's-eye of intellectual predisposition, and thus discover the man.

By focusing our attention upon each in turn in the light of the wisdom of our own and preceding centuries, we may best discover the special parts played by each of the seven factors of education, individually ineffective, collectively an irresistible power.

Factors of truth and beauty

"Again, many of you think it is not only a waste of time but a positive sin to read novels and poetry and general literature, to cultivate in any way the imagination, to take an interest in painting or sculpture or music. You have yet to learn that altho parrots and other imitative animals can get on without imagination, there is no such thing in existence as an unimaginative scientific man. That you have some imagination and individuality is evidenced by your differentiation from all other students of science classes; but have you these well developed, and have you those other

qualities which are absolutely necessary for the success of a scientific worker? Imagination is far and away the most important; but there are also judgment and common sense, and the love of truth and the power of self-sacrifice, which seem always to accompany the pursuit of science."[4]

The divine order of truth and beauty, as conceived by Plato, is at the foundation of all things and forms the soul of education, for a truthless education is fruitless, and an education without the sense of beauty and harmony fails, both of its imaginative elements and of its full effect on other men. The inspiration of these standards and basal guiding qualities is thru religion, the study of the beauty and harmony of nature, of classical and modern literature, of art, led by the personal influence of men of culture and productive capacity.

Intellectual virtue, the truth canon, the first ingredient of education, must be derived from some source or other. Virtue and knowledge do not necessarily run on all fours, many conspicuous instances could be cited of their absolute divorce, and, with Huxley in his Romanes lecture, I am not hopeful of deriving moral qualities from the study of pure science. Such virtues are often derivable from religious ideals, but this is certainly not universally the case, because of the large ingredient of faith in religion.

It is aside from our present path to consider whether the æsthetic factor was more, or less, appreciated by mediævalists than by moderns. The art spirit has certainly suffered a decline since the Renaissance; the spirit of the Florentines was most nearly a revival of the Greek spirit which the world has seen. The sense of the beautiful, combined with the appreciation of natural law, as manifested in Leonardo da Vinci, enters into scientific, no less than into artistic education, and the cultivation of the imagination is as much the constructive basis of the physical sciences as of literature.

In the relative spheres of the essential union or separateness of ethical and æsthetic cultivation, we are again on debatable ground, as will be readily seen from the comparison of the Latin environment, abounding from childhood in æsthetic cultivation, while, perhaps, less insistent upon the element of

[4] Inaugural address of Professor John Perry, *Nature*, October 23, 1902, p. 645.

truth, with the German, English, and American, in short, with Teutonic environment relatively deficient in the sense of beauty, while, perhaps more insistent on the element of truth.

The factor of learning

"With this close hold upon practical life and this constant interest in the politics of the world, especially of England and the United States, no one could be less like that cloistered student who is commonly taken as the typical man of learning. But Lord Acton was a miracle of learning. Of the sciences of nature and their practical applications in the arts he had indeed no more knowledge than any cultivated man of the world is expected to possess. But of all the so-called 'human subjects' his mastery was unequaled. Learning was the business of his life. He was gifted with a singularly tenacious memory . . . the passion for acquiring knowledge which his German education had fostered ended by becoming a snare for him, because it checked his productive powers. It absorbed so much of his time that little was left for literary composition. It made him think that he could not write on a subject till he had read everything, or nearly everything, that others had written about it." [5]

The middle centuries were distinctively the period of learning; the great and enduring contribution of mediævalism to the world and to modern education was its insatiable thirst for information, for knowledge of the achievements of man, as set forth in books and book lore; for literature, and for the traditional science of the Greeks and Romans. As Harris aptly expressed it, "thru learning, we stand on the shoulders of all previous generations," and, figuratively speaking, the survival of mediævalism is only to be deplored in the one great feature of its faith, that a secure position on other men's shoulders is of paramount importance and constitutes an end, rather than a beginning and an accompaniment, of education.

The learned attitude is naturally the historian's attitude toward education. We have cited above the late Lord Acton as a modern mediævalist of the highest type, of vast learning, of limited production, as a storage battery which rarely discharged, as a life illuminating our present contention. By way of contrast to Acton may be instanced, among historians, our own Fiske, Browning, Tennyson, Victor Hugo, and, above

[5] Special correspondence of the *Evening post*, London, June 23, 1902; the *Evening post*, Friday, July 18, 1903.

all, Balzac, as pouring the forces of learning into expression, into the conversations, debates, and discussions of their men and women, or into the pages of history. In his brief, but great, preface to *Père Goriot,* in which Balzac lays bare the whole philosophy of *la comédie humaine,* he shows thoro conversance with the whole biological movement of his times, beginning with Buffon of the middle of the eighteenth century and ending with the famous discussions between Cuvier and St. Hilaire of the early nineteenth—all a matter of pure and well-digested learning. It may be said that his works fairly bristle with learning and knowledge, and that acquisition was one of the great elements of his genius. Similarly, Tennyson's *In memoriam* shows a remarkable comprehension of modern biology, in its many more open and more subtle allusions to evolution and heredity.

Our shelves are loaded with the books of unlearned men. I have in mind two remarkably original works of recent times; they have justly brought their authors great renown, yet they both fail at the critical point, where the authors extend from their specialties and attempt to reach out for broader conclusions in neighboring fields of knowledge—conclusions which are rendered totally invalid, almost ridiculous, thru deficiency in biological and anthropological learning.

Learning necessarily occupies a vast amount of time, and it is a false modernism which depreciates its place in education. How near-sighted are certain reactions against it; how absurd the fads of certain ultra-modern schools; how out of time the premature exclusive specialization; how inadequate the extreme laboratory system; even in the university, how futile to attempt to educate exclusively thru research.

As Emerson observes: Whatever force may have compelled us to education, we are always gravitating back to learning, to the accumulated knowledge of our subject, and this is one of the most striking phases in the self-education of men. We recall that Aristotle opens every disquisition with a review of all that was known and said by his predecessors, that this is the well-known method of introducing the doctorate thesis in Germany. We recall that Darwin, altho eventually more

learned in books than any scientific man of his generation, neglected book knowledge while at Cambridge, and, after becoming attracted to science by observation and discovering how largely it is necessary to draw from the recorded observations of others, was fairly forced back to book knowledge. Fine proofs these, that the teacher should fairly "stoop to conquer," that he should fascinate the student with the spirit of some principal subject, that interest once enlisted, the value and necessity of book knowledge become apparent.

The factor of observation

"You know much of what has been done, but have you the power to discover, to add to the world's knowledge? Your knowledge has been derived from books and lectures; you have now to learn that a week in the laboratory, during which you seem to crawl, during which for examination purposes you do less than in reading ten lines of a text-book, is really of more value to your scientific education than a month's hard reading. This is almost unbelievable to you who are such adepts in passing examinations, yet it is quite true. Lectures and lessons have spoon-fed you until now; lectures and lessons will in future teach you to feed yourselves."[6]

"But how willingly I would as a poet exchange some of this slumbering, ponderous, helpless knowledge of books, for some experience of life and man."[7]

Schopenhauer's premiss that "All truth and wisdom lie ultimately in observation," we find reflected in the lives of men of science and of letters—a very thirst for transition from book learning to original and direct observation of men, of facts and things, of nature, as inexhaustible sources of new knowledge. The reciprocal relations, or the actions and reactions, between learning and observation are wonderfully illustrated in the life of Pasteur—the noblest scientific life recorded. Again, when young Ramon y Cajal, while a medical student, found in works of reference no citations from his own countrymen, he resolved that, if it lay in his power, at least one Spanish name should appear in the history of medicine of the future and remove the reproach of Spain. He threw himself with ardor, not into deeper and more extensive learning, but into the observation

[6] From abstract of inaugural address of Professor John Perry, *Nature*, October 23, 1902, p. 645.

[7] Elizabeth Barrett Browning to Robert Browning, March 20, 1845.

of the nervous system by means of a method which had just been discovered by the Italian histologist Golgi, and with such success that in the course of a few years every anatomical treatise quoted the brilliant discoveries of Cajal from the ancient University of Cordova.

This truism, that the world holds its own by learning, that it moves forward by observation, is the distinctive gift of the scientific spirit to education. It has not yet become a truism of educational practice. Quick and keen in children, undoubtedly inherited from our very remote ancestral life, where powers of observation were factors in survival, this faculty was unrecognized in the mediæval system of education, and is also unknown to the college which ignores the element of observation in its requirements, both for admission and for honors at graduation. It is, therefore, largely ignored in the school which prepares for the college—a condition of things which, however, is widely perceived and rapidly being remedied in the public secondary schools of this country. Here I may quote from a noteworthy recent address by the headmaster of one of the most successful colleges of England:

"A school preparation should be of a kind which will foster the desire and develop the power to overcome difficulties; it should give self-reliance and sufficient knowledge of scientific principles to enable the pupil in after life to understand changing conditions and see their trend. Above all, school work should encourage the spirit of inquiry, which finds delight in making new observations and experiments with whatever resources are available. The principle upon which Humboldt constructed Prussian education a century ago was: whatever we wish to see characteristic of our nation we must first implant in our schools. Assuredly, if we would prepare our scholars for life, the supreme intellectual preparation is found in methods which evoke the faculty, the originality, the mental resourcefulness of our pupils. It is for us to see that the subjects and methods of teaching in our schools are such as to promote the development of these qualities, for national progress depends upon them."

School and college should, from the outset, foster this most fertile of natural faculties. Postponement of observation to the graduate school, where it naturally enjoys its maximum cultivation, is a hazardous experiment, because of the law of degeneration of unused mental powers. What we observe is

less vital than that we do observe, and the introduction of science in the school should be less for knowledge and learning than for facility in vision and elementary reasoning. Observable material is what is called for; not always the same material, neither is it necessarily in the scientific; it may be in the poetical, literary, classical sphere. In the social world, the young observer is most admirably advised by Montaigne:

"This great world, which some do yet multiply as several species under one genus, is the mirror wherein we are to behold ourselves; to be able to know ourselves as we ought to do in true bias. In short, I would have this to be the book my young gentleman should study with the most attention . . . so the several fragments he borrows from others, he will transform and shuffle together to compile work that shall be absolutely his own; that is to say, his judgment, his instruction, labor and study, tend to nothing else but to form that. He is not obliged to discover whence he got the materials, that have assisted him, but only to produce what he has himself done with them."

The factor of reason

"That man, I think, has had a liberal education, who has been so trained in youth that his body is the ready servant of his will, and does with ease and pleasure all the work that, as a mechanism, it is capable of; whose intellect is a clear, cold, logic engine, with all its parts of equal strength, and in smooth working order; ready, like a steam engine, to be turned to any kind of work, and spin the gossamers as well as forge the anchors of the mind; whose mind is stored with a knowledge of the great and fundamental truths of Nature and of the laws of her operations; one who, no stunted ascetic, is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience; who has learned to love all beauty, whether of nature or of art, to hate all vileness, and to respect others as himself."—HUXLEY.

Reason is the great asset of man. Granted the impulses of beauty, of truth, of knowledge, and of observation, there is still to be trained the efficient "logic engine" of thought, so wonderfully pictured by Huxley. George Meredith also speaks in inimitable style of the relation of observation to reason and discrimination:

"Observers of a gathering complication and a character in action commonly resemble gleaners who are intent only on picking up the ears of grain and huddling their store. Disinterestedly or interestedly they wax over-eager for the little trifles, and make too much of them. Observers should begin upon the precept, that not all we see is worth hoarding, and

that the things we see are to be weighed in the scale with what we know of the situation, before we commit ourselves to a measurement. And they may be accurate observers without being good judges. They do not think so, and their bent is to glean hurriedly and form conclusions as hasty, when their business should be sift at each step, and question."

Nature is not over-liberal with this asset; she often richly endows with all other forces while most parsimonious with this. Two of my older scientific colleagues, most learned, most gifted observers, profound students, able writers, and prolific producers, were yet almost devoid of the power of sound logic. On one occasion, after examining their joint advocacy of a certain theory, which I myself strongly entertained at the time, I could not help remarking, "Heaven preserve us from our friends!" Scientific common sense, or the absence of it, is congenital; it comes from our forebears or from that strange benefactress—the saltation in heredity.

If not inborn, this break in the ranks must be perceived and, so far as possible, repaired by the teacher, certainly one of the most difficult, if not most hopeless, of tasks. The induction into correct thinking is not only in formal logic, in philosophy, in the history of the sciences—more especially where taught by personal contact and discussion between master and student—but in the continuous exercise or practice of reasoning by the student himself, guided by kindly, but expert, criticism of the master in every branch of original thinking. Here is where mathematics and the natural sciences make their most effective contributions to education, in affording the data for reasoning from problem to solution, or from cause to effect, in its simpler forms. There is no abbreviated formula for reading nature or men at sight: the invention of the guesses that make an hypothesis, the trials of the hypotheses that make a theory, and the discarding of the theories that fall for a truth; in brief, the unerring scent on the track of new truth can only be acquired by the method of trial and error, guided by skillful and ingenious advice.

The factor of expression

"For my part, I venture to doubt the wisdom of attempting to mold one's style by any other process than that of striving after the clear and

forcible expression of definite conceptions, in which the Glassian precept, 'First catch your definite conceptions,' is probably the most difficult to obey. But still, I mark among distinguished contemporary speakers and writers of English, saturated with antiquity, not a few of whom, it seems to me, the study of Hobbes might have taught dignity, of Swift concision and clearness, of Goldsmith and Defoe simplicity."—HUXLEY.

"All men stand in need of expression. In love, in art, in politics, in labor, in games, we study to utter our secret. The man is only half himself, the other half is his expression."—EMERSON.

Why, with Lycidas, "shun delights and live laborious days"; why acquire the canons of truth and taste, the familiarity with achievement, if you cannot bring forth discoveries and ideas which may have cost you an infinite amount of labor, if you have not the power of expression in language, drawing, painting, sculpture, architecture, or other forms of design?

While considering expression as covering every form of the conveyance of ideas to others—here we may speak only of the written form.

The gist of Huxley's famous sentence, quoted above, is that *ideas, practice, and the native literature are the three chief factors* in the cultivation of style. In language, look to the best lay writers of England, to Huxley himself, as well as to the uniformly fine style developed in France, and avoid Germany as you would avoid a labyrinth or a quicksand.

The mediæval spirit instilled in prejudice to the mother tongue, was manifested in the writing of the Bible and all works of science in Latin; it survives in over-reliance upon Latin and Greek in the cultivation of the art of expression. In this day, when two great exponents of English style, Huxley, with little early classical training, and Tyndall, chiefly of scientific education, stand shoulder to shoulder with two other masters of prose, Maurice and Goldwin Smith, both of classical education; when Darwin and Galton are models of simplicity and clearness, we cannot believe that there can survive a classical monopoly for the acquisition of style. Latin is said to be enjoying a great revival in the secondary schools of America, but the classics, as generally taught with us, fail to have the productive and constructive value in expression which is enforced in England, where style is cultivated and developed

by a constant interchange of classical and English expression. At Eton, for example, the training culminates in the ability to put a *Times* editorial into Greek or Latin. With us, the chief régime of classical preparation consists in translation, parsing, translation; and in truly mediæval spirit some of the most progressive colleges have been piling up "reading" requirements, in raising the standard of admission. As the entrance examination approaches, translation increases in quantity and intensity, for two years there is a long and arduous cram, until the average student becomes fairly surfeited with the very masterpieces of literature and as thoroly cured of any taste for the classics as the Israelites were of any partiality for manna. The transfer of a large proportion, if not of the entire classical training from the culture period of college life to the more purely disciplinary period of school life, is also one of the most conspicuous illustrations of what has been spoken of above as retrogression in the guise of progress.

Happily, however, expression is the one direction in which a substantial advance has been made in American college education in the last two decades. Under wise leadership, in this art we far outclass the Germans, but still lag behind the French. If we are gaining expression, all the more need to follow more ardently the "Glassian precept" to gather our ideas and harvest our observations, so that we may bring them forth into the final stage of original production.

The factor of production

"I do not propose for a moment to invite you to blink the fact that our huge Anglo-Saxon array of producers and readers—and especially our vast cis-Atlantic multitude—presents production uncontrolled, production untouched by criticism, unguided, unlighted, uninstructed, unashamed on a scale that is really a new thing in the world. It is all a complete reversal of any proportion, between the elements, that was ever seen before."—*The Lesson of Balzac*, HENRY JAMES.

The stirring appeal and command of Carlyle for production should be carved in stone over the portals of every school, college, and university, and embodied in the precepts of every teacher, because production, as our foremost intellectual service

to God and to man, and as the end of the whole educational system, should be prepared for by instilling the true modern spirit into every course in school and college.

The word is used advisedly for all activities of the artisan, as well as of the artist, because there are as many who can produce in some form as there are few who can create.

The vast majority of men are born consumers; there are few who are either instinct with the desire to produce or who have had the vast hiatus between consumption and production impressed upon them. Many clever people fail to grasp the distinction; in the metropolis of America, for instance, we consume vast quantities of the foreign intellectual product, the music, the art, the literature; and the metropolitan, in his heart, thinks that we are a musical, an artistic, or a literary people; whereas, we may lay small claim to any one of these attributes until, in these commodities of the mind, our exports equal or exceed in quality our imports.

There is in America at large, outside of the great field of mechanical endeavor, a singular blindness to the supreme importance of productive and creative work, to the fact, as Henry James observes, that the quality of our production in philosophy, politics, political administration, in law, medicine, literature, in pure or applied science, in whatever you will, is the one absolute criterion of the nation's intellectual standing. As a recent writer has said, invention abounds, discovery is rare; the inventor enjoys a national reputation and a niche in the Hall of Fame; the discoverer often enjoys an undisturbed obscurity, and looks for his recognition, not in his own country, but in the older countries of Europe, where the value of discovery is appreciated.

There is a similar blindness, even where there is less excuse for it, in our schools, colleges, and universities, as to the prolonged, broad, and profound training which must precede and accompany production in any branch of human endeavor. Again, we may quote from Suess's farewell address:

"In the course of the years I have seen and experienced much. In the beginning a man has honestly to endeavor with zeal, and with certain restrictions upon himself, to learn the detail; and sometimes the hair whitens

before he is in a position to obtain a general view and to risk a first synthetic attempt. This first step to synthesis is, however, the deciding step in the life of the inquirer. Soon he notes that his judgment obtains more consideration among his colaborers; he becomes more careful and conservative with the same; and finally the hour arrives in which his soul is filled with the highest satisfaction, because he has been able to add to human knowledge some new view or a new fact—a feeling over against which everything naturally vanishes that the outer world is able to offer in acknowledgment."

The initial step in the schooling for production is what is familiarly known as the original exercise, which may begin in the kindergarten and terminate in the most advanced laboratory —the whole centrifugal process is the same in kind, while it differs infinitely in degree. In classics, it is the turning of English into Latin and Greek; in mathematics, it is the original problem; in English, it is the theme; in science, the induction from the observed experiment, however simple; in brief, it is the outflow from the mind, rather than the inflow to the mind; the acquisition of the centrifugal, rather than the centripetal power. Thus are taken the rudimentary, the intermediate, as well as all the successive steps from the simplest to the very highest grades of production. I fancy the instinct that this is the real purpose and end of education has been the more or less unconscious inspiration of every great teacher of all time. It is the most difficult part of education. It is the point where students rebel most. It is the point where the largest number of teachers fail. It is the method which is most difficult to prescribe. It is the fine memory bringing the highest collegiate honors and standing, combined with the inability to produce, which results in the barren after-life and wonder as to the worth of the first diploma. It is far easier to compel a student to read six books of Homer than to train him to turn one page of English properly into Greek; it is far easier to learn by rote Tennyson's *In memoriam* than to produce one line worthy of a place in that great poem; it is far easier to memorize Darwin's entire *Origin of species* than to devise a single new biological experiment of real value.

Efficiency, constructiveness, productiveness are the ascending democratic species of the aristocratic genus creation. There

are corresponding gradations in the training of the efficient man, of the constructive man, of the productive man, leading to that of the creative man—the same in kind, but of great difference in degree. The grade is always determined by the nature and response of the mind itself to the opportunities or intellectual and social environment which is offered to the mind.

Even the centripetal system of education cannot crush out the passion for creative work which is born in some men and women, but since the mission of education is itself production, it must produce the producers, it must discover them and train them to the highest, as well as to the intermediate or the lower, planes of creative work. Once inoculated with this virus, education enjoys a new vitality, an immunity to ennui; the centrifugal power, inborn or instilled, turns into those channels which taste and opportunity unfold; into science, literature, theology, law, medicine, commerce, manufacture, politics. Conceit is checked and humility engendered by learning what has been achieved, and the supreme difficulty attending achievement.

What I am contending for is that the *one absolute essential* in all education is to hold out the centrifugal life of originality, of efficiency, of construction, of production, of creation, as the chief end of education, rather than to make any of the subsidiary factors, such as intellectual morality, or learning, or reasoning, or the cultivation of taste, or the power of expression, ends in themselves.

Let master and student be impatient of the systems which postpone production until after years of learning and acquisition thru brilliancy of memory give a false sense of power. Rather from the outset learn and think to do. Be not impatient of the slowness of the process of acquiring either the power of production or of the many complex factors which enter into it.

This is an outline of the universal principles which illuminate the largest, as well as the most detailed, problems of education.

Whatever the grade of instruction, whatever the subject, whether in science or literature; whatever the choice of profession, we may always find our path lighted by the same signals, and ask whether a symmetrical development of the seven factors is being brought about. Every great subject has within it the possibility of developing the seven factors, but a combination of subjects, selected with reference to their special influences, may bring about this development to the greatest advantage, for there are studies to stimulate the imagination, others to develop the memory and power of learning, others to facilitate observation, others reason, and so on. The universal illuminants remain both as the guide and the single basis of criticism of the teacher, of the course, of the curriculum, of the institution, of the student himself, of his most elementary thoughts, and of his most advanced original contributions.

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VII

THE POLICY OF THE CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING

In all European countries where education is liberally supported, the teacher's compensation includes the retiring pension; and in the more enlightened countries, like Germany, pensions are provided for the widows and orphan children of the teacher. This provision grew out of the conviction, which came from long experience, that to induce strong and able men to enter and to remain in the calling of the teacher, the privations due to small income must, in some measure, be counterbalanced by removing the uncertainty in regard to provision for old age and the support of those dependent upon the breadwinner.

For some years past there has been a growing conviction in America that the time had come for the establishment in our American system of education, both in the colleges and in the public schools, of a similar provision. More and more the work of the teacher has been handed over in the public schools to women who have accepted small pay, while men have sought more remunerative employment. Even in the institutions of higher learning, inducements to outside work have grown relatively stronger; and the difficulties which come with rising prices to the man with modest income have borne upon no class more than upon professors and teachers. Few of these receive a sufficient sum of money to support a family and make provision for old age; and it has become increasingly clear in the past decade that the disadvantages which attach to the calling of the teacher by reason of the small salaries paid must, in some way, be offset by a removal of the uncertainty of provision for old age and disability, if strong and ambitious men are to be drawn in sufficient numbers to that profession.

It was a recognition of this condition in American education which induced Mr. Andrew Carnegie to make his notable gift of April 16, 1905, for the establishment of a system of retiring pensions in the higher institutions of learning in the United States, Canada, and Newfoundland. "I have reached the conclusion," he wrote, "that the least rewarded of all the professions is that of the teacher in our higher educational institutions. New York City generously and very wisely provides retiring pensions for teachers in her public schools, and also for her policemen. Very few indeed of our colleges are able to do so. The consequences are grievous. Able men hesitate to adopt teaching as a profession, and many old professors, whose places should be occupied by younger men, cannot be retired."

Mr. Carnegie's gift aroused the deepest interest amongst all friends of education; but, naturally, amongst teachers it was received with the heartiest appreciation, and they have waited with keen expectation the announcement of a definite plan for its administration.

The board of trustees chosen by Mr. Carnegie to administer this trust is composed of twenty-two presidents of colleges and universities and three business men. Nearly all of the college men who make up the majority of this board have spent the greater part of their lives as teachers, and have naturally, therefore, the most genuine appreciation of the economic problem which the teacher faces. It will be their wish and their mission to so administer this great trust as to make it count, in the highest possible degree, for the cause of the teacher and of higher education.

By an Act of Incorporation, approved by the President, March 10, 1906, these trustees have been incorporated by Congress under the name of the Carnegie Foundation for the Advancement of Teaching, a name which indicates, approximately at least, the purposes for which the corporation is formed. These are clearly stated in the Act of Incorporation itself, as follows:

> The objects for which said corporation is incorporated shall be—
>
> (a) To receive and maintain a fund or funds and apply the income thereof as follows:

To provide retiring pensions, without regard to race, sex, creed or color, for the teachers of universities, colleges, and technical schools in the United States, the Dominion of Canada, and Newfoundland, who, by reason of long and meritorious service, or by reason of old age, disability, or other sufficient reason, shall be deemed entitled to the assistance and aid of this corporation, on such terms and conditions, however, as such corporation may from time to time approve and adopt: Provided, however, That the said retiring pensions shall be paid to such teachers only as are or have been connected with institutions not under control of a sect or which do not require their trustees, their officers, faculties, or students (or a majority thereof) to belong to any specified sect, and which do not impose any theological test as a condition of entrance therein or of connection therewith.

(b) In general, to do and perform all things necessary to encourage, uphold, and dignify the profession of the teacher and the cause of higher education within the United States, the Dominion of Canada, and Newfoundland aforesaid, and to promote the objects of the Foundation, with full power, however, to the trustees hereinafter appointed and their successors from time to time to modify the conditions and regulations under which the work shall be carried on, so as to secure the application of the funds in the manner best adapted to the conditions of the time.

In a word, the object of this foundation is to bring into the academic life the principle of the retiring pension for the professor and his widow as a part of the American educational system, so that the teacher may receive his retiring allowance, not as a charity, but as a matter of right. To establish this principle is to raise the plane of academic life, to add to the teacher's calling a greater security, to lift from his shoulders the most worrying load which he bears, making it possible for men to throw themselves heartily and unreservedly into the work of the teacher, knowing that old age or ill-health will not leave them helpless. To establish this principle and to dignify and advance the cause of the teacher and of higher education is the object of the Carnegie Foundation for the Advancement of Teaching.

The practical question which at once faces the board of trustees is this: With an income of $500,000 a year, what is the wise method to pursue to accomplish the ends just mentioned?

Some idea of the problem may be gained by a brief survey of the educational situation. This is a gift to the universities, colleges, and technical schools of the three English-speaking countries of North America. There are in these countries

something more than seven hundred institutions calling themselves colleges or universities. No data are available which show with any accuracy the financial support of the teacher in all these institutions. Indeed, it is difficult to obtain such data in all cases. For example, in most of the Roman Catholic colleges the teaching is done by priests, who receive no fixed salaries; and in many of the smaller institutions salaries are contingent on the tuition fees received. The following table will show more completely than any data heretofore brought together the financial status of the average college and of the average professor. This table includes about one-half of the entire number of so-called higher institutions. In it every institution having a denominational connection, however loose, has been classed as denominational, while all institutions actually controlled by the state have been classed under that head:

PAY OF PROFESSORS IN AMERICAN COLLEGES

Class of institutions	Number of institutions	Total number professors	Total amount salaries	Average number in faculty	Average pay-roll in institution	Average pay of a professor
Denominational	218	2,802	$3,305,930	13	$15,165	$1,180
State Institutions	58	1,461	2,617,210	25	45,120	1,787
Non-Denominational	51	1,944	3,708,220	38	72,710	1,907
	327	6,207	$9,631,360			

This table shows that the average American college (and American is here always used in the continental sense) which is under denominational control has 13 members in its faculty, an average pay-roll of $15,165, with an annual average salary for each professor of $1180; that the average state institution has a faculty of 25 members, a pay-roll of $45,120, and an average annual salary for each professor of nearly $1800; and that the colleges having no denominational connection or control have, on the average, a faculty of 38 members, a pay-roll of $72,710, and an average annual salary for a professor of $1907.

In the aggregate, 327 colleges employ some 6200 professors, at a total annual compensation of $9,631,360, or at an average annual salary of $1550 a year for each professor. It will be

understood that in this exhibit are included only the salaries of professors of the various grades who are permanent members of the faculty. The pay of instructors and assistants, whose appointments are usually temporary, is not included, nor are they considered in the pension scheme.

It is clear that an income of $500,000 could not maintain an adequate pension system in these hundreds of institutions, whose annual pay-roll amounts to nearly ten millions of dollars; and that, if the principle of the retiring pension is to be brought in as a part of the academic life, it can be done only by administering the fund along some line of consistent policy, and not as a charity. The trustees have, after careful consideration, adopted the following principles for their guidance in the administration of the trust:

1. By the terms of the letter of gift of the founder and by the Act of Incorporation which is based upon that letter, this is a gift to higher education. It is to be used, therefore, for the teacher in the higher institutions of learning and is not available to teachers in high schools, seminaries, academies, or other institutions of an academic grade lower than that of a college.

2. Being a gift to institutions of higher learning, the administration of the fund raises at once the question: "What is a college?" For the term college has no distinct meaning in the United States and Canada, applied as it is to institutions varying so greatly in equipment and entrance requirements. The seven hundred institutions calling themselves universities and colleges are in no sense comparable. They include many which are universities or colleges in name only; these titles having been adopted by ambitious institutions in very much the same way that the title of colonel is adopted by certain individuals. To recognize all of these without discrimination as institutions of higher learning would be to abandon any fair standard for the high school or for the college.

The trustees of the Carnegie foundation have, therefore, adopted for the present an arbitrary definition of a college, which is that now in use under the revised statutes of the State of New York:

An institution to be ranked as a college, must have at least six (6) professors giving their entire time to college and university work, a course of four full years in liberal arts and sciences, and should require for admission, not less than the usual four years of academic or high school preparation, or its equivalent, in addition to the pre-academic or grammar school studies.

In addition to these academic qualifications, it is now clearly recognized that an institution, in order to do fairly the work of a college, must have at least a minimum of endowment, and the trustees have voted that, to be recognized as a college for the purposes of the foundation, an institution must have a productive endowment of not less than $200,000. These standards are modest ones, both from the intellectual and the material standpoint; and to require less of a college would seriously impair the ideal of both the college and the high school.

3. The Act of Incorporation bars from participation in the benefits of the fund all institutions under denominational control. Notwithstanding the definiteness of the language there used, the decision of what constitutes denominational control is not easy. There exist today amongst the seven hundred colleges and universities of the three countries interested all possible grades of denominational control or connection. In its extreme form this control involves the absolute ownership of the institution and the appointment of the officers and faculty. In its weakest form it represents little more than a friendly relation between a denomination and an institution, shown, perhaps, by the appointment of an annual visiting board. In nearly all cases, however, whether the control be of the strict or of the loose kind, it results in the choice of a board of trustees composed almost entirely of members of a specified denomination. At just what point between these extremes of denominational connection an institution may be recognized as free of denominational control is not easy to say. In this matter the trustees will go slowly, seeking to deal with the whole matter, not only in a generous spirit, but with the purpose to carry out justly and fairly the provisions of the Act of Incorporation. Institutions will be admitted as eligible to the benefits of the foundation, so far as denominational control is concerned, under the following condition:

1. Universities, colleges and technical schools of requisite academic grade, not owned or controlled by a religious organization, and whose acts of incorporation or charters specifically provide that no denominational or sectarian test shall be applied in the choice of trustees, officers or teachers, nor in the admission of students.

2 In the cases of institutions not owned or controlled by a religious organization, and in which no specific statement concerning denominational tests is made in the charters or acts of incorporation, the trustees of such institutions shall be asked to certify by a resolution to the trustees of The Carnegie Foundation for the Advancement of Teaching, that, notwithstanding the lack of specific prohibition in the charter, "no denominational test is imposed in the choice of trustees, officers or teachers, or in the admission of students, nor are distinctly denominational tenets or doctrines taught to the students."

4. The question as to the admission of state institutions to the benefits of the foundation has been left to be decided at the annual meeting of the trustees in November next, and its discussion can be safely left until that time. From the standpoint of education there are serious objections to the recognition in a state like Wisconsin, for example, of a modest college and the omission of the great state university which is the real center of higher education. On the other hand, an important question of general public policy is involved when a private agency steps in between the state and an institution which the state has founded and controls. For nearly a half-century the great state universities in the Central West have labored to establish the principle that higher education in their respective states is to be maintained by the state itself. This principle has been established, and these universities are soon to be in possession of the largest incomes which any institutions in America receive. The state may, therefore, fairly be expected to provide a retiring pension system for its own professors.

5. The scale upon which the retiring allowance should be fixed is one requiring careful consideration. It is evident that a uniform percentage of the active pay of a professor does not form a just scale for computing retiring allowances. For example, 50 per cent. of a $5000 salary may furnish a decent retiring allowance; but to give to a professor who has taught for many years efficiently and faithfully on a salary of $1200 one-half of that amount would scarcely tend to dignify and

advance the profession of the teacher. The trustees have therefore adopted a scale of retiring allowances, under which men receiving small pay obtain a much larger proportion of their active pay. Thus a professor receiving $1200 would receive a retiring allowance of $1000, while a professor receiving $5000 would receive a retiring allowance of $2700. There can be no question, I think, of the justness and fairness of making the retiring allowance to some degree a function of the amount of the active pay itself.

6. In all foreign universities the pensioning of the widow and orphans of professors forms one of the most important parts of the system; and in the German universities there is a carefully regulated scale, which fixes the exact amount which the widow or orphans of a professor of a given tenure of service may receive. It is not possible, at this stage of our American college development to provide a pension system so elaborate. On the whole, the teacher will be most concerned for the wife who survives him; and, in the rules adopted by the trustees, it is provided that the widow of a professor may receive during her widowhood a pension of one-half that to which her husband was entitled.

7. In order that the retiring allowance may come to a professor in the regular performance of his duty as a matter of right and not as a charity, it is essential that he should receive it thru his own institution. The trustees of the foundation will therefore endeavor to recognize professors, so far as possible, thru the institutions themselves. Just what institutions will ultimately share in the benefits of the foundation cannot for some time be determined. A provisional list of those clearly entitled to do so will be announced in a short time, and to this accepted list additions will, from time to time, be made.

To a professor in one of these accepted institutions the retiring allowance will be awarded automatically. That is to say, once he has complied with the conditions, he will receive his retiring allowance immediately upon the application of his institution.

The trustees realize, however, that there are able and devoted

teachers doing unusual work for education in institutions which, by reason of lower entrance requirements, or for other cause, are not for the time admitted to the list of accepted institutions. Individual professors of great merit or of distinguished service in such institutions may be awarded retiring allowances by the trustees, but in such cases they will deal directly with the individual professor.

8. The grounds upon which a retiring allowance is granted are those of age, long service, or disability. Of these the ordinary normal grounds will be those of age or long service, and upon the following conditions:

1. *Age.*—To be eligible to retirement on the ground of age, a teacher must have reached the age of sixty-five and must have been for fifteen years professor in a higher institution of learning. Whether a professor's connection as a teacher with his institution shall cease at an earlier or later age than sixty-five, is a matter solely within the jurisdiction of the professor himself and the authorities of the institution in which he serves.

2. *Long Service.*—To be eligible for retirement on the ground of length of service, a teacher must have had twenty-five years' service as a professor in a higher institution of learning. It is not necessary that the whole of the service shall have been given in accepted colleges, universities or technical schools.

In no case shall any allowance be paid to a teacher who continues to give the whole or part of his time to the work of teaching, as a member of the instructing staff of a college or technical school.

At the meeting of the trustees of the foundation on April 9, 1906, the following rules for the granting of such normal retiring allowances were adopted, founded upon the principles which have just been named.

RULES FOR THE GRANTING OF NORMAL RETIRING ALLOWANCES

1. A normal retiring allowance is considered to be one awarded to a professor in an accepted university, college or technical school, on the ground of either age or length of service. The term professor, as here used, is understood to include Presidents, Deans, Professors, Associate Professors, and Assistant Professors, in institutions of higher learning.

2. Retiring allowances shall be granted under the following rules, upon the application of the institution with which the professor is connected, and in the application it should be clearly set forth whether the retiring allowance is recommended on the ground of age or service.

3. In reckoning the amount of the retiring allowance the average salary for the last five years of active service shall be considered the active pay.

4. Any person sixty-five years of age, and who has had not less than fifteen years of service as a professor, and who is at the time a professor in an accepted institution, shall be entitled to an annual retiring allowance computed as follows:

(a)—For an active pay of sixteen hundred dollars or less, an allowance of one thousand dollars, provided no retiring allowance shall exceed ninety per cent. of the active pay.

(b)—For an active pay greater than sixteen hundred dollars the retiring allowance shall equal one thousand dollars, increased by fifty dollars for each one hundred dollars of active pay in excess of sixteen hundred dollars.

(c)—No retiring allowance shall exceed three thousand dollars.

5. Any person who has had a service of twenty-five years as a professor, and who is at the time a professor in an accepted institution, shall be entitled to a retiring allowance computed as follows:

(a)—For an active pay of sixteen hundred dollars or less, a retiring allowance of eight hundred dollars, provided that no retiring allowance shall exceed eighty per cent. of the active pay.

(b)—For an active pay greater than sixteen hundred dollars the retiring allowance shall equal eight hundred dollars, increased by forty dollars for each one hundred dollars of active pay in excess of sixteen hundred dollars.

(c)—For each additional year of service above twenty-five, the retiring allowance shall be increased by one per cent. of the active pay.

(d)—No retiring allowance shall exceed three thousand dollars.

6. Any person who has been for ten years the wife of a professor in actual service may receive during her widowhood one-half of the allowance to which her husband would have been entitled.

7. In the preceding rules, years of leave of absence are to be counted as years of service, but not exceeding one year in seven. Librarians, registrars, recorders, and administrative officers of long tenure, whose salaries may be classed with those of professors and assistant professors, are considered eligible to the benefits of a retiring allowance.

8. Teachers in the professional departments of universities whose principal work is outside the profession of teaching are not included.

9. The benefits of the Foundation shall not be available to those whose active service ceased before April 16, 1905, the date of Mr. Carnegie's original letter to the Trustees.

10. The Carnegie Foundation for the Advancement of Teaching retains the power to alter these rules in such manner as experience may indicate as desirable for the benefit of the whole body of teachers.

How well these administrative regulations will operate in the actual work of the foundation can only be told after some experience has been had. In the first steps which are to be taken, the trustees are proceeding with great care. It requires only brief consideration to show that the establishment of the principle of the retiring pension as a part of the

American academic life is of vastly greater importance than the granting of pensions at random in the numerous institutions thruout this wide area. In the one case the administration of the trust becomes a definite and well-considered effort to dignify and to advance the profession of the teacher and the cause of higher education; while the other plan would make of the foundation a charity, worthy indeed in itself, but one quite as likely to do harm rather than good to the cause of education and to the profession of the teacher. There have been in the past of American education comparatively few agencies whose work it was to consider education from any other than the local standpoint. Generally, devotion to education in this country has meant devotion to the cause of a particular institution. For the first time there has been here formed a board of trustees, composed in the main of college teachers drawn from the whole country, whose business it is to administer a great fund for education along national and even international lines. In the effort to make this wise gift serve a truly wise and far-reaching purpose, the trustees count that they will receive a hearty coöperation and, at least, a patient hearing from the American teacher.

HENRY S. PRITCHETT

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING,
NEW YORK

VIII

DISCUSSIONS

MODERN TREND OF PHYSICS TEACHING

The EDUCATIONAL REVIEW for March, 1906, contains an article from Professor Woodhull of Teachers College, Columbia University, which is in part a sweeping indictment of the school teaching of physics, as it is now conducted under the influence of the requirement maintained by the College Entrance Examination Board. On this paper I wish to make some comments.

If there are any teachers who confine their teaching to drill on the thirty-five laboratory exercises, or who do not give much attention to qualitative experiments performed in the presence of the pupils and to interesting applications of the facts and principles illustrated in the laboratory, I have not much to say in their defense, except this: that they may have too little time and too little lecture-room apparatus, and that they will probably grow wiser as they gain experience and strength.

But is the general character of the work laid out in the course under discussion, for which, I understand, Professor Woodhull holds college men chiefly responsible, fundamentally wrong from the point of view of the needs of school pupils? He seems to think so, and his opinion, backed by his experience and his position as a teacher, must have carried much weight in an assembly like the Schoolmasters' Association, wherein there were few, it is likely, of equal experience in the same field of teaching. But, in estimating the value of this opinion, it is fair to ask whether it has been formed and expressed in a judicial spirit, and, for the purpose of answering this question, I shall now quote and comment upon a part of one paragraph in his article, taking consecutive sentences:

"A great ado is made about getting the specific gravity of wood. All wood is heavier than water, but they set out to

prove that a certain block is half as heavy as water. It floats on water for the same reason that an empty bottle floats. If we let the water enter and drive out the air, both sink." A little farther down in this paragraph, Professor Woodhull speaks with contempt of "academic discussion." Now, can anything be more academic in the bad sense than the statement, given as an objection to experiments on the practical specific gravity of a given block, that "all wood is heavier than water"? Further, let me ask what teacher sets out "to prove that a certain block is half as heavy as water"? If he teaches in accord with the spirit, or even the letter, of the thirty-five-exercise course, he sets his pupils to find out what is the practical specific gravity of the block in question, whether this be 0.50, or 0.80, or anything between these values. But, says Professor Woodhull, "It makes a difference whether the wood comes from inland or seashore; from the north side of a hill or the south side; whether it is green or kiln-dried; whether it is summer or winter." Very true and very interesting, but very inconclusive, not to say illogical, as an argument against a practical study of the methods of finding specific gravity. Professor Woodhull goes on, "In winter our closet doors shrink so that we can poke our fingers thru. In summer they swell so that we cannot shut them. They try to coat the block of wood with paraffin, so that air shall not get out or water get in. No one has yet learned how to keep wood from shrinking and swelling." Very well; does not the fact that the pupil is working with a block soaked with paraffin (not "coated"; I am sorry that Professor Woodhull gives even a left-handed indorsement to the lazy practice of coating with paraffin) give opportunity and reason for instructive remarks on the merits of various methods of "waterproofing" wood. He says next, "The pupils, who are often wiser than doctors of philosophy, know that their teachers are making a pretense of getting the specific gravity of this block of wood merely for the sake of an academic discussion." No, not merely for this purpose, as I have already indicated; but largely, very largely, I must admit, the object of these exercises on flotation and specific gravity is to give some quantitative

basis of experience for a vital knowledge of certain fundamental principles of flotation. These principles, whether "academic" or otherwise, are the essentials for the intelligent design of all things that are to float. The discovery of one of them, and the picturesque circumstances which attended this discovery, are the chief title of Archimedes to the fame which has survived him more than two thousand years. The neglect of one or two of these elementary principles by the makers of life-preservers cost the lives of hundreds of persons two or three years ago in the waters adjacent to New York City.

I might quote and criticise Professor Woodhull further; but enough has been said, I think, to show the intemperateness of his attack on the general plan of the College Entrance Requirement in Physics. His paper contains many suggestions which should be of value to teachers who are working in general accord with this requirement, and who, following these suggestions, might work in more complete accord with it. His unfortunate mistake, especially unfortunate because of the large number of prospective teachers of physices who come directly under his influence, lies in a failure to recognize and to foster what is good in the present teaching of physics, while using every effort to improve and liberalize that teaching.

It is possible that the physics requirement of the College Entrance Board is somewhat less liberal than that adopted by the National Educational Association. The former calls for "many and varied numerical problems"; the latter does not mention numerical problems, tho it is doubtless meant to include them. The former specifies "instruction by lecture-table demonstrations, to be used mainly as a basis for questioning, upon the general principles involved in the pupils' laboratory investigations"; the corresponding statement in the latter is "with qualitative experiments by the instructor, elucidating and enforcing the laboratory work, or dealing with matters not touched upon in that work." But each requirement aims to have the pupil gain "a comprehensive and connected view of the most important facts and laws in elementary physics."

I do not maintain that any syllabus of physics experiments, made several years ago for school use, should remain unre-

vised. There should be changes from time to time, sometimes additions, sometimes omissions; but I urge that these changes should be made in a conservative spirit and with due regard to practicability in classes of considerable size.

I am not prepared to affirm that physics, as now taught in schools which prepare pupils for college, is a very popular study, or that it is as popular as it ought to be; but, when Professor Woodhull, following President G. Stanley Hall and other critics of present conditions, writes: "Twelve years ago 24 per cent. of the students took it voluntarily; now a considerable portion of the 10 per cent. take it only by compulsion," I cannot help wondering whether it is true that twelve years ago all the pupils studying physics "took it voluntarily." It may be true; but, so far as I know, no one who makes the assertion endeavors to prove it.

Incidentally, Professor Woodhull touches on what I believe to be the main reason for the somewhat unsatisfactory character and results of our present school teaching of physics, the inadequate preparation of many teachers for the work which they undertake. This is a condition of things that time will gradually, if not rapidly, improve.

EDWIN H. HALL

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A REPLY

Thru the courtesy of Professor Hall I was permitted to see the above in manuscript, in order that my reply might appear conjointly with it in the EDUCATIONAL REVIEW.

I must disclaim any intention of making a "sweeping indictment" or an "intemperate attack." Nor do I understand wherein I am responsible for "academic discussions in a bad sense" which teachers may carry on concerning the specific gravity of a block of wood. Otherwise, I find myself in accord with Professor Hall's suggestions in this paper for improving the work in physics.

If the high schools are sending poor material to the colleges, as we sometimes hear, it follows that the colleges must have sent poor material to the high schools first. Perhaps the

syllabus should be extended to include a prescription of the work college professors may do.

JOHN F. WOODHULL

TEACHERS COLLEGE,
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BOSTON SCHOOL ADMINISTRATION

The article with the above title in the April number of the EDUCATIONAL REVIEW is so admirable, and the history which it gives is so typical of the progress of such reform in a democratic state, that it is to be regretted the lesson was not made stronger by giving at least an outline of earlier efforts for reform leading up to the well-planned campaign which, under the leadership of Mr. Storrow, resulted in a reduction of the number of the school committee from twenty-four to five. To reënforce that illuminating paper, therefore, the writer ventures to present such an outline.

In 1897 the Women's Education Association held a public meeting in Boston, at which Dr. A. S. Draper, then president of the University of Illinois, delivered an important address upon "The crucial test of the public school system." Following that meeting, the same association, together with the Association of Collegiate Alumnæ, the Twentieth Century Club, and the Municipal League, commissioned nine (afterwards increased to twelve) persons to prepare and present to the General Court a bill for the reorganization of the public schools of Boston. Of this committee Dr. Samuel Eliot was chairman until his lamented death, and most of the other members had seen active service upon school boards, or had made a special study of school administration.

This committee, in 1898, 1899, and 1900, brought before the Legislature a progressively modified bill, supporting it each year with verbal arguments from many persons prominent in the affairs of the city and with letters from eminent teachers and school administrators thruout the country. The bill, as each year perfected, was the result of a thoro and progressive study of the problem in the light of what was being done in other cities of the United States, and of what Boston specifically required. The successive forms of it urged upon the General

Court differed, therefore, somewhat in form, tho the underlying principles were steadily adhered to. Those principles, as embodied in the bill of 1900, were, in substance, as follows:

SECTION 1. The inhabitants of the city of Boston . . . shall . . . elect from the inhabitants of the city nine persons, either men or women, to constitute the school committee of said city. . . .

SECTION 2. . . . Said school committee by a two-thirds' vote of all the members thereof shall elect a superintendent of schools, a business director, an auditing clerk, a secretary, and a messenger. . . . The officers elected by the school committee as herein provided shall continue in office until they resign or are removed by a two-thirds' vote of all the members of the school committee.

SECTION 3. The superintendent of schools, the assistant superintendents appointed as hereinafter provided, and thirty masters or teachers, or such larger number as the school committee may from time to time provide, elected from and by the teachers of the public schools of said city, not including temporary teachers, shall constitute the school faculty. The school committee shall adopt rules for the election of the faculty, so that every grade of instruction and every school that does not fall within any such grade shall be represented. The school faculty shall serve without extra compensation, shall consider all educational subjects, including such as are disciplinary and sanitary, and shall make such reports and recommendations to the school committee as the faculty may deem proper.

SECTION 4. The superintendent of schools shall have the general charge and supervision of the teachers and teaching and of the school attendance officers. He shall have the determination of the courses of study and, by and with the advice and consent of a committee of five appointed by him annually from the school faculty, the selection of the text-books and the apparatus to be used in teaching. He shall appoint six assistant superintendents or such larger number, and such number of directors, masters and teachers and school attendance officers as the school committee shall from time to time authorize. He may promote teachers and may dismiss any officer or teacher at his discretion; *provided, however*, that all such appointments, promotions and dismissals shall be reported to the school committee, and shall stand as final unless disapproved by the school committee by a majority vote of all the members thereof within two weeks after the report is made; and *provided, further*, that no teacher or school attendance officer shall be appointed until after examination and certification by the assistant superintendents, acting as a board. The superintendent of schools may be present and speak, but not vote, at all meetings of the school committee and its sub-committees. The school attendance officers may be either men or women, and shall have and exercise the powers and duties now imposed by law, or which may hereafter be imposed by law, upon truant officers or school attendance officers.

SECTION 5. The business director, under the direction of the school committee, shall have the care and maintenance of the school buildings, and cause them to be kept in a clean condition; shall purchase all supplies

required by the school committee, the schools, or the officers and employees elected by the school committee or appointed by any such officer; shall have the appointment, direction and removal of the janitors, engineers and other persons whom he shall require to assist him in performing his duties: *provided, however*, that all such appointments, promotions and dismissals shall be reported to the school committee, and shall stand as final unless disapproved by the school committee by a majority vote of all the members thereof within two weeks after the report is made: and *provided, further*, that the principals of schools be given by the school committee defined rights in the supervision of janitors and engineers. He shall not expend for all such purposes a greater sum than shall have been authorized in gross by the school committee. . . .

Of its first form the EDUCATIONAL REVIEW said, in 1898: "The bill would bring about an absolute revolution. The superintendent of schools would cease to be a dignified figurehead and become an almost unequaled educational power. The management of minute details by the school committee would come to an end, and the modern administrative device of concentrating power and responsibility would be full and frankly adopted. It is inconceivable that so radical a measure will not be strongly opposed; and the sources of the most active opposition may safely be predicted. The enactment of this measure would be an inestimable gain, even if every provision should not work as well as expected."

In the process of urging this needed legislation the committee held a number of public meetings—one being addressed by President Butler of Columbia—carried on an extensive correspondence, and brought every legitimate pressure to bear upon the members of the General Court. That, despite hearty support from a great number of citizens, the successive bills failed of enactment was due of course to many and mixed causes. The most potent factors, however, were the customary apathy of the public toward all educational measures; the rather radical character of the changes proposed; the opposition of certain organizations, the members of which feared a resulting diminution in the influence of women voters; the neutrality of the P. S. A., who maintained it to be their sole function to secure the services of desirable school board members; the hostility of the school committee itself, which, because it at that time contained a clear majority of "reform" members, believed that the needed reorganization could—except in

the point of a diminution in number—be effected within the board itself; and the covert opposition of the professional politicians, who regard school appointments as proper political spoils and the school committee as a legitimate training place for party workers.

Convinced that the opposition of the spoilsmen could not be overcome, except by a popular uprising or by removing from the school committee those powers of the purse which made it then especially attractive to such gentry, the Committee of Twelve decided to drop the plan for a general reorganization until the time—plainly not far off—when the composition and behavior of the school committee, thru political manipulation, should become an offense to decent citizens, and to concentrate all its energies upon taking the control of the large sums annually to be spent upon new buildings and repairs out of the school board's hands. Therefore, in 1901, discarding every feature excepting that—which had been attached as a supplementary act to the bill of 1900—of the creation of a Schoolhouse Commission, the committee was able to push thru the Legislature a bill depriving the school committee of the power of erecting new buildings and of repairing old ones. Under this Act of May, 1901, the Schoolhouse Commission

> shall have and exercise all the power and authority conferred, and be subject to all the duties and obligations imposed, by all existing laws, whether special or general, upon the city council or school committee of the city of Boston relating to selecting and requesting the street commissioners to take lands, providing temporary accommodations, and making, altering and approving designs and plans for school purposes; erecting, completing, altering, repairing, furnishing and preparing yards for school buildings, and making contracts and selecting architects for doing said work; and said power and authority shall no longer be exercised by, nor said duties and obligations be imposed upon, said city council or school committee: *provided, however*, that said board of schoolhouse commissioners shall not incur any expense for any purpose . . . beyond the total sums which may be appropriated by the school committee.
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> SECTION 4. Said board shall not erect or substantially alter any building except in accordance with plans approved by the superintendent of public schools of said city, or provide temporary accommodations for, or furnish, school buildings, or prepare school yards, except as he shall approve; nor shall said board request the street commissioner to take any land except within the limits of a school district which shall first be

designated by the school committee, or take or pay for lands except as approved by the mayor.

While heartily acknowledging the rare qualities of Mr. Storrow for conducting such a campaign as he did, it should not be forgotten that, as the writer has tried to show, there were several antecedent causes for the success of last year's movement for putting Boston in line with modern educational thought and practice. Chief among these were: (1) the fact that the public mind had been well plowed and harrowed by the four years of agitation, in 1898-1901; (2) the fact that the legislation creating a Schoolhouse Commission had shorn a place on the school committee of most of its value in the eyes of the professional politicians; and (3) the fact that the arrogance and reactionary policy of the school board—the control of which had been overwhelmingly regained by the spoilsmen in 1903—had excited keen popular resentment. That the control of the board had been taken away from the reform element was in no small measure the result of the earlier action of the P. S. A. and its elected nominees in actively or tacitly opposing the safeguarding by an act of legislature of those principles of school administration the wisdom and justice of which they had acknowledged by embodying them, in their golden days of power, into admirable rules and by-laws,—which their successors promptly rescinded or annulled.

Moreover, while rejoicing not only that the school committee is now small, but also that its present membership is so satisfactory, it must not be forgotten that the Storrow bill secured little or nothing beyond a reduction in numbers. Therefore, the principle of giving the superintendent and the rest of the teaching force larger freedom and greater power is not yet safeguarded by state law, but rests only upon the easily reversible rules of the present board. Reform cannot be considered as fully accomplished until it is impossible for the good work of the present committee to be nullified by the action of some later committee, the majority of which, thru political or sectarian exertions, may have been made hostile instead of friendly toward the admirable existing plan of administration.

JAMES P. MUNROE

BOSTON, MASS.

IX

REVIEWS

A college algebra—By HENRY BURCHARD FINE, Professor of Mathematics in Princeton University. Boston: Ginn & Co., 1905. vii+595 p. $1.50.

A first course in analytical geometry—By CHARLES N. SCHMALL. New York: D. Van Nostrand Company, 1905. vii+318 p. $1.75 net.

A brief course in the calculus—By WILLIAM CAIN, Professor of Mathematics in the University of North Carolina. New York: D. Van Nostrand Company, 1905. x+280 p. $1.75 net.

Professor Fine's book is evidently a product of ripe scholarship served by uncommon powers of exposition. Moreover, it was written in the just faith, in which many an author is sadly lacking, that a due regard to the logic of the subject renders it not only more intelligible but also more interesting and stimulating; and it was deliberately thought out and deliberately composed, in the course of several years, with extraordinary patience and conscientiousness. The result is that we have here in the English language a school and college textbook in which algebra is really made to appear in its proper character as a genuinely deductive science, as a rigorously concatenated structure on a solid foundation of explicit assumptions. The work is modern not only in content but, what is more, in spirit; that is to say, the reader is taken into confidence, the secrets and motives of architect and builder are disclosed, and the student, so far from being invited merely to behold a finished edifice, is permitted to witness and to coöperate in the work of construction whether of foundation or of superstructure.

Detailed analysis of the book, even if that were desirable, is here impossible. As to scope, suffice it to say that the treatise falls into two parts which together provide adequately for the algebraic needs both of the school and of the college. The first part (of 70 pages) deals with the number system as such. This system is presented, not in the traditional way as

an inherited kit of tools ready to hand, but as a living thing, a natural growth from simplest beginnings in the needs of human life and thought. Fundamental ideas of Rowan Hamilton, Grassmann, Helmholtz, Dekekind and Georg Cantor, which have usually been reserved for graduate years, are happily rendered accessible to the beginner,—an important and difficult achievement.

In the second part occur several departures from the usual arrangement of topics. These changes, we think, are recommended by didactic as well as by scientific considerations. For example, the early introduction, in connection with simple equations, of the method of undetermined coefficients, and the subsequent occasional use of the method, serve to give familiarity with and deserved prominence to that powerful instrument of analysis. We heartily approve, too, of the emphasis that Professor Fine has placed upon what he calls "the division transformation" and, in connection therewith, upon the remainder theorem and synthetic division. Among other commendable features, we note the prominence accorded to the notion of graph of a function and especially the introduction of that notion prior to the presentation of Sturm's theorem. Indeed so numerous and so conspicuous are the excellences of the book that one hesitates, as not wishing to appear unappreciative or ungrateful, to mention matters in which it might possibly be improved. We venture, however, to believe that both earlier and greater stress might well have been laid on the method of mathematical induction. For one may hold that that form of argument is certainly peculiar to mathematics, without agreeing with Poincaré that every strictly mathematical argument is reducible to that form.

Mr. Schmall's book presents the usual account of the conic sections, contains the traditional chapter on higher plane curves and closes with a brief introduction to the analytical geometry of three dimensions. It is written in a direct and energetic style which, while in general it is clear enough, tends not infrequently to be a little slap-dash or over-hasty, as witness, for example, the "definitions" offered on p. 37. Some of the demonstrations are excellent, as, for example, the proof

of the proposition that every equation of first degree in two variables represents a straight line. On the other hand, the attempted demonstration (p. 298) that "a single equation in three variables represents a surface" can hardly be said to support the author's claim that "all proofs given are rigorous." That claim indeed, in these peering microscopic days, it is extremely hazardous for any one to make. Mr. Schmall's intention to exalt method over matter is praiseworthy, but it ill consists with the exclusive use of the "secant method" in tangent problems. The book contains numerous illuminating exercises, but it is not provided with an index, and the table of contents is meager. We have pleasure in commending the frequent use of abridged notation and determinants. On the other hand, the adoption of "sinister" and "dexter" to denote respectively the left-hand and right-hand members of an equation seems destined to be regarded as unhappy and injudicious.

While some sections are well written, the work is marred by frequent inaccuracies and infelicities of thought and expression. Descartes appears in the form "Des Cartes," p. 1; continuous motion is motion without "hops" (p. 3); functional relationship of two variables is so defined (p. 22) that only one of them is a function of the other; because $a + \infty = \infty$ addition is here said to be "futile," (p. 25); "nought" is used occasionally for zero; on p. 41, we are told that "$f(x, y) = 0$ is called an implicit function"; in the definition (p. 55) of increment, the word "exceed" is employed confusedly; after Δx is described as an "indivisible symbol," it is lawfully employed both as numerator and as denominator, and the like ineptness characterizes the description of the symbol $\frac{dy}{dx}$ (pp. 62, 188); on p. 87 we are told that Δx of the quotient $\frac{\Delta y}{\Delta x}$ "can never reach zero" because the quotient "would then take the form $\frac{0}{0}$ and would be meaningless." The author is of course aware that it is one of the happy offices of the calculus to assign meaning to such forms.

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X

NOTES AND NEWS

The Influence of the Report of the Committee of Ten on Secondary School Studies

In the *School review* of April, 1906, Professor Edwin G. Dexter of the University of Illinois prints an interesting analysis of some facts which bear upon the influence exerted during the past ten years by the recommendations of the Committee of Ten on Secondary School Studies appointed by the National Educational Association in 1892, of which Committee President Eliot of Harvard was chairman. Professor Dexter follows a statistical method of inquiry, and this is always a broken reed to lean upon in judging matters so intangible as influences. Nevertheless, the facts which he assembles and states are in themselves significant. He is certainly right in his opinion, that if conditions as found to exist in 1905 coincide more generally with the recommendations of the Committee of Ten than did the conditions as they existed in 1895, then either the recommendations of the Committee have been acted upon or else their report was an anticipation of the lines of natural and necessary development.

Professor Dexter draws the conclusions that the recommendations of the Committee seem to have carried weight in regard to the teaching of Latin; that in regard to the teaching of English and French and German, the tendency seems to be in opposition to the recommendations of the Committee; that in regard to the teaching of mathematics, some of the Committee's recommendations appear to have had weight, and others not; that in regard to the teaching of physics, chemistry, natural history, history, civil government, and political economy, there is a wide variation in the practice of different schools.

On the whole, Professor Dexter's conclusion is unfavorable

to the influence of the Committee's recommendations upon the secondary school program. On the other hand, he would be justified in going much farther than he does in emphasizing the influence of the Committee's work upon secondary education generally. There can be no question that the recommendations of the Committee were vitalizing in the highest degree to secondary school teachers, both public and private, and even a cursory observation would show that those recommendations have powerfully influenced both the organization of the secondary school program of studies and the methods of presenting the various subjects in the classroom. Much of this influence, and that the most valuable part, would not necessarily be referred to in the published material upon which an inquirer who follows Professor Dexter's method must of course rely.

The National Educational Association

After soliciting as wide an expression of opinion as possible from the responsible officers of the Association itself and of its various departments, the Executive Committee of the National Educational Association voted unanimously at a meeting held at Chicago on May 5 to abandon hope of holding a meeting in 1906. We have no doubt that the decision of the Committee was wise and that it will be supported by substantially the unanimous sentiment of the Association.

To propose to hold a meeting at San Francisco or in its vicinity was, under all the circumstances, not only quixotic but heartless. Those who were to have been the Association's generous hosts need material help and active sympathy, and they cannot bear any burden of hospitality at this time, however light that burden might be made. On the other hand, the necessary preliminary arrangements for a successful meeting of the Association take a long time to conclude. A local organization must be created and given sufficient time in which to prepare the way for the successful and well-organized gatherings to which the members of the Association have become accustomed under Secretary Shepard's devoted administration of his office.

Within the sixty days remaining before the date fixed for the meeting no proper arrangements could be made, and it is certain that if the meeting had been fixed for some other point than San Francisco, the attendance would have been inconsiderable. President Schaeffer and his colleagues were looking forward with just expectation to a memorable gathering at San Francisco in 1906. Every loyal member of the Association will exert himself to the utmost to make the meeting of 1907 serve for that of 1906 as well as for itself.

The English Education Bill.

It is little less than an epochal debate that is now taking place in the British Parliament on the Education Bill introduced by Mr. Birrell on behalf of the government. Students of education should by all means take pains to inform themselves concerning the questions at issue in this debate, for they are of far-reaching educational and political significance. When the bill shall have been finally acted upon, the EDUCATIONAL REVIEW will present an analysis of the bill and of the debate upon it by an authoritative hand.

There is small reason to doubt that the bill, substantially as introduced, will pass the House of Commons by a comfortable majority. What its fate will be in the House of Lords, however, remains to be seen. It may be that the long expected controversy over the existence and powers of the House of Lords itself will be precipitated by the pending Education Bill.

Shortly before his death, Mr. Gladstone said to an American teacher that the next great question to divide the English people would be the education question. That prophecy, now nearly ten years old, is rapidly being fulfilled.